QUALITY REQUIREMENTS FOR SUPPLIES TO OTO MELARA S.p.A.

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Section **1.3** is a brief guide to the consultation of the document, the application of which depends on the type and classification of the supply: refer to the synoptic tables in **Section 6** identifiable in the OTO Melara title blocks of drawings in the fields: Commodity Classification for Quality and Safety Classification.

Sections 1-5 offer an introduction to the document, in particular, **section 4** defines the interfaces between OTO Melara and the Supplier;

Sections 10-17 refer to specific supplies; **section 18** contains the forms.

The document refers to the requirements of the applicable standards ISO 9001/EN 9100/AQAP, series 2000/AER-Q.

The user of this document who requires further clarification on aspects of this document may send comments to: www.otomelara.it Quality/FAQ/contacts.

Issued by	Authorised by
E. Risola Quality OTO Melara S.p.A.	R. Cortesi Chief Executive Officer OTO Melara S.p.A.

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QUALITY REQUIREMENTS FOR SUPPLIES TO OTO MELARA S.p.A.

PROCESSING

PREPARED BY	CHECKED BY
M. Simonelli Quality/Quality System OTO Melara S.p.A.	E. Stretti Quality/Quality System OTO Melara S.p.A.

APPROVALS

Organization and Human Resources Development OTO Melara S.p.A.	G. Zullo
Quality OTO Melara S.p.A.	E. Risola

QUALITY ASSURANCE DEPARTMENTS	MANAGER	DATE and SIGNATURE
Quality La Spezia plant	A. Pigoni	
Quality Brescia plant	C. Ligabue	
Purchasing OTO Melara S.p.A.	G. Bonatti	

FOR CONFORMITY TO ORIGINAL

E. Risola

Date: February 2015

OTO Melara S.p.A.
Quality

QUALITY REQUIREMENTS FOR SUPPLIES TO OTO MELARA S.p.A.

REVISION INDEX

Rev.	Date	Modifications made	Department
01	**March 2005**	Definitive coding as RQA0001, completions and critical reading for formal disclosure to all business functions involved in Procurement.	QA
01	**May/June 2005**	Addition of observations and comments as a result of sharing with the company functions. The processing of the observations and comments is provided in detail in the document 05/039/VR03. Modification of the organization of the section "Definitions and general requirements; documentation required by OTO Melara: requirements related to the product and its level of criticality." Document issued.	QA
02	**October 2007**	Introduced section 1.1 (guide to the consultation of document RQA0001).Modified: Business Logo; Section 3 (Reference standards); Section 7-Table 8 (specification of the typology of the documentation of control according to UNI EN 10204; adding class F); section 5.1.1 (criticality level); section 5.3.1 (non-metallic indefinite materials); Section 12 (additions prescription on the relative norms to requirement of quality for the welding and modified the standard of reference from UNI EN 729 to UNI EN ISO 3834).	QA
03	**February 2010**	Addition of cover note related to document file availability on company web site and to collection of comments and request for clarifications; Added note at section 2 (Applicability) for what relates to OM facilities production processes. Updated Section 3 (Reference standards…); Updated Section 4 OTO Melara /Supplier interface matrix); Added Section 3.1 (Suppliers classification…); Section 7 of previous rev. has become section 6; Added section 5.2 (identification of critical characteristics on drawings); Updated: Table 7 (correspondence between the supply criticality level and the Supplier Quality management Quality Level); tables 8÷17 associating Quality Management System (ISO 9001/AQAP) for each commodity class; Addition of commodity class "V" (mechanical catalogue parts) and "W" (Military catalogue products developed by Suppliers)"; Updated: section 7.1.2 (traceability); section 7.3 (Special processes…), 7.6 (FAI), 7.7.3 (Government Surveillance), 8.6 (Manufacturing and Control Plan), 8.7 (documentation relevant to components with criticality level 1), 8.9 (Safety data sheets), 8.10 (Certificate of Conformity), par. 10 (equipment/fixtures designed by Suppliers), section. 13 (general requirements for welded joints…), section 14 (Ammunition); Updated in the whole document ISO 9001:2000 to ISO 9001:2008.	QA
04	**August 2012**	Review in accordance with the requirements of EN/AS/SJAC 9100:2009: modified section 3 (reference standards), section 4 (interfaces ...), section 5 (identification of requirements of OTO Melara and correlation with supplier's quality system), section 6 (synoptic tables ...), section 7 (definitions and general requirements), section 8 (management of contract documentation....), section 9 (packaging and ...), section 10 (equipment designed by the supplier), section 11 (provisions to adopt for developing the design ....), section 12 (software), section 13 (General requirements for welded joints ...), section 14 (ammunition), section 15 (manuals ...), section 16 (activities developed by suppliers at OTO MELARA), section 17 (activities developed by suppliers at the sites...).	Quality
05	**13 January 2014**	Modification of first page, section 2 (applicability), section 3 (reference standards), section 4 (interfaces...), section 5 (identification of OTO Melara requirements and correlation with Supplier's quality system), section 6 (synoptic tables...), section 7 (definitions and general requirements), section 8 (management of contractual documentation), section 9 (packing and..), section 10 (equipment/devices designed by the supplier), section 11 (general requirements for welded joints...), section 14 (ammunition), section 15 (manuals...), section 16 (activities developed by the supplier at the premises of Oto Melara), section 16 (activities developed by the suppliers at the worksites...), Introduction to section 1.2 (policy of OTO Melara...) section 1.4 (Supplier's undertaking)	Quality
06	**November 2014**	Introduction of a "disclaimer" on the first page and safety classification "Company General Use" on all the pages; Modification of first page, section 1 (scope of the document and policy), section 4 (OTO Melara/supplier interfaces), section 6 (synoptic tables...), section 7 (general requirements for management of the supply...), section 8 (general requirements for management of contractual documentation...), section 9 (packing and shipment), section 11 (provisions to adopt for developing the design...). Section 6: improvement of the connection between the synoptic tables and the documents of reference.	Quality

N.B.: The description of the introduced changes is provided on this page while the modified points are indicated through a vertical segment on the edge of the page in question.

TRACEABILITY DATA

Revision	File	File Identification
06	QA/039	Company network/proc_uff/RQA0001-06_E (MSW 2010)

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1 DOCUMENT SCOPE, PROCUREMENT POLICY OF OTO MELARA AND SUPPLIER'S UNDERTAKING

1.1 SCOPE

The purpose of the Quality Requirements RQA0001 is to define the minimum general requirements of Quality Assurance for supplies to OTO Melara SpA - hereinafter OTO Melara - which does not replace but complements the requirements of the ISO9001/AQAP 2000 series and EN9100/AER-Q 9001/AER-Q 2000 series.

This document is an operative tool for use in the procurement process for company departments, to help them issue purchase orders and check the results, and for the Supplier/Subvendor, who will find in it the information needed to develop the supply correctly. In particular OTO Melara incoming inspection will make reference to tables in section 6 to evaluate the conformity of supplies.

1.2 PROCUREMENT POLICY OF OTO MELARA

It is the policy of OTO MELARA to supply superior quality products and services which meet the Customers' requirements and expectations. OTO Melara believes that Suppliers are an integral part of this process and share responsibility for Customer satisfaction. This document is available in a complete form to the Supplier who is required to refer to the document in relation to the supply commissioned, in accordance with the elements in the technical documentation and in the order. It should be noted that the implementation of these requirements is implicit in the acceptance of the order.

1.2.1 OTO MELARA's policy on the prevention of procurement of counterfeit parts or of parts suspected not to have been approved

A "counterfeit part" is a product that has been made or modified, without the authority or right to do so, to imitate or resemble another product with the intent to mislead or defraud by making the imitation appear to be original or genuine. A "part suspected not to have been approved" is a product that may not, or is suspected not to have been made in accordance with the applicable laws and regulations.

That being said, the policy of OTO Melara on the prevention of procurement of counterfeit parts or pirated parts or parts suspected to be in violation of intellectual property rights is to procure products only through authorized manufacturers and suppliers who can guarantee their authenticity and origin. This means that the supplier is required to ensure the full traceability of the sources used for the procurement of materials and components and the necessary chain of records.

1.3 GUIDE TO CONSULTING DOCUMENT RQA0001

To simplify consultation of the document, the essential sections for a correct interpretation are reported below:

- **Section 2.1:** correlation table between type of supply and requirements contained in document RQA0001;
- **Section 4.1:** OTO Melara/Supplier interface matrix;
- **Section 5.1 and Table 5:** classification of the Criticality Level;
- **Section 5.1.2 and Table 6:** commodity classification in terms of quality requirements and interpretation of the drawing legend;
- **Section 5.2: Identification of key characteristics on the drawing**;
- **Section 5.3 and Table 7:** Supplier Quality management System level related to items criticality level;

- **Section 6 and relevant tables:** detailed instructions pertaining to activities and operative documentation to be related to the supply and its safety criticality level;
- **Section 7, 8** General requirements for the operational management of the supply and for management of the documentation requested by OTO Melara;
- **Section 18:** explicative attachments.

Sections **10, 11, 12, 13, 14, 15, 16, 17** are applicable to specific types of products.

1.4 SUPPLIER'S UNDERTAKING

The Quality Requirements RQA0001 are an integral part of each Order / Purchase Agreement when cited therein. In this case, the Supplier accepting the order:

- accepts the requirements and contractual restrictions contained;
- undertakes to establish, document, implement and maintain a management system for the quality of supplies able to meet the requirements defined in this document;
- undertakes to develop the business and to provide the documentation in compliance with the requirements, including statutory and regulatory requirements and those implicit for use;
- agrees to give prior notice of any change of site or production facilities;
- undertakes to transfer to the supply chain the applicable requirements expressed in the OTO Melara technical and procurement documents.
- The Supplier is also to ensure that this document is in his possession and to this end, it is available to download on the website: www.otomelara.it/

This document integrates the Quality System of the Supplier who is responsible for implementing all the methods defined in his own quality standard, the requirements of OTO Melara drawings, technical specifications and documents, and applicable rules defining the performance, quality and technical features of the supply.

The contents of this document do not affect OTO Melara's rights and faculties in accordance with the provisions of the general purchase conditions regulating relations with Suppliers.
In the event that the Supplier decides to entrust a part of the Purchase Order/Contract received to a Subvendor, **the Supplier must request the approval of Procurement, Quality Assurance/ STQ of OTO Melara. In particular, in the case of special processes, these must be approved by OTO Melara and / or its customer. The supplier is obliged to include the requirements contained in the Quality Requirements RQA0001 in their purchase order.**

Following the approval of the Subvendor by OTO Melara, the supplier must:

- inform the Subvendor of the contents of this document
- obtain from the Subvendor the types of documents that apply to the supply as and when required, and send them to OTO Melara
- obtain access to the Subvendor's offices, production units and documentation for OTO Melara and its Customer for the purposes of performing audits and attending tests and inspections;
- give prior notice to OTO Melara about any possible change of Subvendors.

Please note that OTO Melara will consider the Supplier who has been assigned the order/contract the body responsible for the fulfilment of what is requested in this document

In the event that the supply is part of a programme managed by a consortium or a temporary group of firms, the standardization of the applicable quality requirements will be treated in dedicated Quality Plans agreed between the parties. These plans will constitute the main quality reference and will be complemented by this document.

2 APPLICABILITY

On the basis of the type of classification of the supplier and the supply requested, all requirements of this document are to be applied and conformity may be verified and checked by OTO Melara

Any deviation from the requirements established, unless specifically approved following the submission of a formal request for deviation or waiver, will be the subject of nonconformity.

This document applies to all types of supplies, in particular:
- Materials;
- Assemblies, subassemblies, parts and components;
- Plants and systems;
- Tools and equipment;
- Design, construction, fine tuning, integration, testing, installation and commissioning;
- Technical assistance;
- Logistic support;
- Documentation (specifications, plans, procedures and records, operating manuals and maintenance, etc.).
- all OTO Melara designed products or coded as such;
- products designed and developed against OTO Melara requirements;
- catalogue products;
- services and technical consulting.

It is also applicable to the supplies handled by intermediaries.
This document is also applicable to the execution of OTO Melara processes, which involve suppliers (products, services), for any reason.

For construction of products for which OTO Melara is a licensee, this document will still be applicable, unless specific provisions are included in the order.

2.1 CORRELATION TABLE BETWEEN TYPE OF SUPPLY AND REQUIREMENTS CONTAINED IN THIS DOCUMENT

The table below constitutes a matrix between the types of supply, the class of goods code (commodity class) and the applicable sections in this document in order to provide a general picture purely for reference and not to be considered exhaustive.
The table allows the Supplier to find the prescriptions related to the intended supply and OTO Melara to find the control elements to be applied.
Sections 1 to 9 are generally common to all types of supply, section 6 contains the detailed requirements for various coded classes of goods divided in criticality classes described in section 5.1.1.
In sections 10÷17 specific subjects for certain supplies are developed.
For other types of product not mentioned, sections 1, 2, 3, 4, 5, 7, 8, 9 apply.

QUALITY REQUIREMENTS FOR SUPPLIES TO OTO MELARA S.p.A.

TYPE OF PRODUCT OR SUPPLY	Code		Equipment/devices designed the supplier	Provisions to adopt for developing the design in compliance with OTO Melara requirements	Type tests	Software	welded Joints and unwelded mechanical/electrical connections	Ammunition	User manuals and spare parts catalogues	Attachments
		Sec. 1÷9	**Sec. 10**	**Sec. 11**	**Sec. 12**	**Sec. 13**	**Sec. 14**	**Sec 15**	**Sec. 16**	**Sec. 17**
Non-metallic indefinite materials	**A**	x								
Functionally important non-metallic materials	**B**	x								
Welded structures and mechanical components	**C**	x				x				
Plant/systems	**D**	x	x	x	x	x		x		
Processing using subcontracted materials	**E**	x	x	x	x	x	x		x	x
Metallic indefinite materials and unfinished products	**F**	x								
Castings	**G**	x								
Forged and moulded parts	**H**	x								
Electrical control panels, consoles	**I**	x	x	x	x	x		x		
Nuts, bolts and screws	**L**	x								
Welding material	**M**	x				x				
Complete assemblies	**N**	x	x	x	x	x		x		
Electrical and electronic components	**O**	x				x				
Optical and electro-optical components and assemblies	**P**	x	x	x	x	x		x		
Software	**Q**	x	x	x	x		x	x		
Ammunition	**R**	x		x	x	x	x			
Hydraulic components	**S**	x								
Activities performed by Suppliers at the OTO MELARA plant (internal)	**T**	x							x	
Services rendered by Suppliers at the Customer's facility (external)	**U**	x								x
Catalogue commercial parts - mechanical	**V**	x								
Supplier developed military products available in a catalogue	**W**	x						x		
Equipment	**Y**	x	x	x	x	x	x	x		

3. REFERENCE STANDARDS FOR SUPPLIERS' QUALITY MANAGEMENT SYSTEMS

Reference Standards are those which apply in the context within which OTO Melara operates and they must cover fields of application consistent with the types of supplies proposed by the Supplier.

ISO 9001:2008	Quality Management Systems – Requirements.
ISO 9000:2005	Quality Management Systems – Fundamentals and Vocabulary
AQAP-2110 Ediz. 3	NATO Quality Assurance Requirements for Design, Development and Production.
AQAP-2210 Ediz. 1 (Ex AQAP-150)	NATO supplementary Software Quality Assurance Requirements to AQAP-2110.
AQAP-2120 Ediz. 3	NATO Quality Assurance Requirements for Production.
AQAP-2130 Ediz. 3	NATO Quality Assurance Requirements for Inspections and Tests.
AQAP-2131 Ediz. 2	NATO Quality Assurance Requirements for Final Inspection
AQAP-2070 Ediz. 2	NATO Mutual Government Quality Assurance (GQA) process.
AQAP-2009 Ediz. 3	NATO Guidance on the use of the AQAP 2000 series.
AER-Q-2110	Requirements for Quality Assurance by D.G.A.A. concerning design, development and production.
EN/AS/SJAC 9100:2009	Quality Management Systems-Requirements for Aviation, Space and Defense Organizations.
NDA0002	Code of Ethics (of OTO MELARA S.p.A.)

This document refers, by references with a revision index, or not, (or by issue date) to provisions from other publications. As for the references with a revision index (or issue date), subsequent amendments or revisions to these publications apply only if specifically introduced in this procedure as an update or revision. For publications without a revision index (or without issue date), the latest available revision of the same applies.

Note 1: NATO standards can be referred to on the following website: http://nso.nato.int/nso/nsdd/listpromulg.html. Their structure follows that of ISO 9001:2008, which is divided into 3 separate standards (AQAP-2110, 2120, 2130) and an additional standard (AQAP-2131) limited to companies performing simple activities which can be verified by means of final inspections. There is a dedicated standard for software (AQAP-2210).

Note 2: The status of UNI/EN/ISO standards can be obtained online from:
www.uni.com
www.iso.ch

Note 3: MIL standards can be obtained online from:
http://quicksearch.dla.mil/
http://www.fas.org/man/dod-101/sys/index.html

3.1 SUPPLIERS CLASSIFICATION IN THE VENDOR REGISTER

To receive an order Suppliers are to be registered in the Vendor Register of OTO MELARA classified according to their characteristics and capabilities consistently with its scope of approval (defined by the set of commodity groups that the supplier is authorized to provide.)
For this purpose it is fundamental that OTO Melara's questionnaires are compiled correctly and returned so that all the necessary information can be recorded in the Vendor Register and for a Purchase Order to be issued.
The supplier has to keep this information updated especially in the context of changes in the Company (eg. address), certification of the Quality Management System, special processes, personnel qualifications and capabilities related to the design, production, control.
In order for a purchase order to be issued, it is necessary that the Supplier status is recorded as "active" in the Register. This means that the Supplier is eligible to provide products or services to OTO Melara consistently with its scope of approval.

"Active" suppliers are classified in the OTO Melara Vendor Register in two main categories:

a) approved suppliers, including:

- authorized
  Producer or Dealer of catalogue products, standard parts, consumables which may influence the quality of the product (oil, grease, paint, tools, etc.), technical and maintenance services related to the production line.
- qualified
  Suppliers whose supplies are related to products, processes or services intended to be an integral part of OTO Melara's products or be used for their logistic support):
  - ✓ qualified for products classifieds as criticality level 3 (see Table 5)
  - ✓ qualified for products classifieds as criticality level 2 (see Table 5)
  - ✓ qualified for products classifieds as criticality level 1 (see Table 5);

b) conditionally approved suppliers:
In general suppliers are of this type if their approval is subject to particular constraints or conditions, expressed by associating the name of the Supplier with appropriate "points of attention" in the IT system of OTO Melara.

N.B.: the points of attention are instructions which are necessary for the proper and effective management of the supply, such as the mandatory presence of OTO Melara personnel during particular stages of processing, testing by OTO Melara, providing documentation according to standards beyond those normally expected, etc.

The supply of parts or components and processes which do not fall within the approval of the supplier may be refused, unless it is documented that they come from subvendors approved by OTO Melara.
Depending on the severity of the situations arising in the course of the audits and tests, the Suppliers can be "removed"/"suspended" from the Register for qualitative and/or performance problems.
Suppliers considered unsuitable to provide products or services to OTO Melara, but who do not have orders in progress and to whom purchase orders are not due to be issued in the short term are considered "potential".
Suppliers are also classified according to the commodity class/classes they are able to supply.

Suppliers are subject to a Rating according to specific algorithms; detailed information related to the Vendor Rating are available in Quality, Suppliers Profile section of the internet site: www.otomelara.it/
The Supplier's Quality management System is subject to OTO Melara monitoring and approval. Inspections and audits including subvendors can be carried out before, during or after a purchase order is issued.

The supplier will be informed of the deficiencies which may have been found during these inspections or audits and to which they are required to provide a prompt solution. The corrective actions must be submitted for inspection and approval by OTO Melara Quality Assurance Department.
(see section SUPPLIER QUALITY SYSTEM LEVEL)

4 OTO MELARA/SUPPLIER INTERFACES

All the documents required for the supply issued by OTO Melara and to be provided by the Supplier are shown in the tables in section 4.1, which also shows the departments issuing and receiving them.
Information regarding the Procurement Departments of the two production sites is provided below:

OTO Melara S.p.A.
Sede La Spezia

Procurement Department
Via Valdilocchi, 15
19136 La Spezia
ITALY
Tel. +39 0187 582209

OTO Melara S.p.A.
Sede Brescia

Procurement Department
Via Lunga 2
25126 Brescia
ITALY
Tel. +39 030 3791212

The various types of documents must be physically identified and separated so that there is no doubt as to which department they must be forwarded to.

Delays in the internal distribution of documents attributable to the Supplier due to wrong type identification may generate nonconformity reports preventing payment of the invoices and penalising the Supplier's rating.

The Supplier must also refrain from consigning the supply when it is not accompanied by the necessary documentation since:

a. the product will be declared nonconforming
b. its ranking will be lowered due to the nonconformity attributable to it.

The dates of consignment of documents refer to the letter of intent, the contract and/or the purchase order.

Applications for deviation or waiver from the requirements set out in this document, which must always be approved by OTO Melara Quality Assurance Department, should be addressed to the Procurement Department.

4.1 OTO MELARA/SUPPLIER INTERFACE MATRIX

TABLE 1 DOCUMENTATION ISSUED BY OTO MELARA

OTO MELARA documents	OTO MELARA departments involved in document despatch				
	Procurement	**Materials management**	**Quality/Materials Incoming Inspection / STQ[1]/ QPM[2]**	**Quality Assurance/QS**	**Administration, Finance and Control**
1. Purchase document	For action ISSUING	For Info	For Info		For Info
2. Technical documentation specified on the order and not attached to it.	For info	For action			
3. Test procedures specified on the order and not attached to it.	For info	For info	Through		
4. Reference configuration (production phase)	For info	For action	For info		
5. Changes to orders (purchase documents)	For action ISSUING	For info	For info		For info
6. Nonconformity reports	Through[3]	For info	For action ISSUING	Monitoring by Vendor Rating	For info when debit note is envisaged
7. Inspection reports c/o the Supplier	For info	For info	For action ISSUING	For info. Monitoring by Vendor rating	For info for negative results (in case of debit note)
8. Debit notes	For action FORMALIZATION	For info	For info		For action ISSUING
9. Audit reports	For info	For info	For info	For action. Monitoring by Vendor rating	
10. Shipment documents (for example: sub contracted material …)		For action, through General Warehouse			For info

[1] STQ: Technical Services of Quality
2 QPM: Quality Program Manager
[3] Issues and signs the cover letter

TABLE 2 DOCUMENTS ISSUED BY THE SUPPLIER

Documents issued by the Supplier	OTO MELARA departments involved in document despatch			
	Procurement	**Materials Management**	**Quality/Material Incoming Inspection/ STQ[4]/QPM[5]**	**Quality Assurance / QS**
1. Technical/Quality Questionnaire (to be updated every two years or after each significant change to the organization)	For action (to be handled together with Quality Assurance)			For examination and Vendor Register update
2. Balance of last two years for Suppliers with supply value (towards OTO MELARA) exceeding 200K €/year	For action			
3. Quality Manual (to be constantly updated)	For info through Vendor Register		For info through Vendor Register	For action and Vendor Register update
4. Request of authorization for Subvendors with attached list of main subvendors and preliminary Manufacturing and control Plan "MCP" (to be delivered during the negotiation)	For action		For competence of Quality/Quality Technical Service "QTS"	
5. Order confirmation (original)	For action			
6. Quality Plan, Configuration Management Plan (**within 60 calendar days** of receipt of the order)			For action: verification and approval, working together with other departments (**within 15 working days** of receipt)	
7. Manufacture / Control plan (to be delivered together with Quality Plan)		through for obtaining approval of technological content	For verification and approval for those parts of competence **prior to commencement of activities**	
8. Special and critical processes specifications employed as an alternative to those envisaged in OTO MELARA technical documentation to be delivered within **30 calendar days** from the order receipt		For info	For verification and approval prior to commencement of activities	
9. Welding Process Specs (WPS) and mechanical/ electrical joints process specs to be delivered before the commencement of activities			For verification and approval prior to commencement of activities	
10. Certification of special process and personnel employed in, including NDC	For info through Vendor Register		For verification and approval prior to commencement of activities	For info for Vendor Register update
11. Acceptance test procedure to be delivered before the commencement of activities			For verification and approval prior to commencement of activities	
12. Request for deviation / waiver from/of set requirements. To be presented when necessary, surely before presentation to final acceptance	For info	For info	For action jointly with Design department.	

[4] STQ: Technical Services of Quality
5 QPM: Quality Program Manager

TABLE 3 DOCUMENTS ISSUED BY THE SUPPLIER WHICH IMPACT ON DESIGN DEPT. (continues from table 2)

Documents issued by the Supplier	OTO MELARA departments involved in document despatch				
	Procurement	**Materials Management**	**Quality/ Materials Incoming Inspection/ STQ[6]/ QPM[7]**	**Quality Assurance / QS**	**Design dept. (Project Manager)**
13. Request for modification to the OTO MELARA drawings/lists used (modifications can be proposed whenever deemed necessary)	For info	For action (for despatch to Design department and Configuration Control)	For info		For technical aspects and management
14. Work progress monitoring	For info	For action			
15. Project Plan (both HW and SW) (within **60 calendar days** from Order receipt) and all planned documentation			For action		For action
16. Project development monitoring					For action
17. Design review documentation (**10 work days** before the date of the event)			For Quality aspects		For technical management
18. Technical documentation certifying validation of own-design products			For Quality aspects		For technical management
19. Own-design product configuration included in OTO MELARA product (baseline)		For info	For info		For action
20. Proposals for Modification to own-design products included in OTO MELARA products	For info		For info		For action and coordination
21. Notification of willingness to perform tests/inspections or agreed manufacturing activities (with notice of at least **10 working days**).			For action. (Quality/Materials Incoming Manager)		
22. Certificate of Conformity Supplies test certificates and other documentation required to be delivered together with the supply			For action, to be controlled together with materials/ products		
23. Analysis of nonconformities reported by OTO MELARA (form attached to Nonconformity Report for materials/products under warranty). Must be returned together with the repaired/reworked/replaced materials.			For action.	For info	

[6] STQ: Technical Services of Quality
[7] QPM: Quality Program Manager

TABLE 4 DOCUMENTS ISSUED BY THE SUPPLIER WHICH IMPACT ON LOGISTICS DEPT. (CONTINUES FROM TABLE 3)

Documents issued by the Supplier		OTO MELARA departments involved in document despatch				
		Procurement	**Materials management**	**Quality/ Materials Incoming Inspection / STQ[8]/ QPM[9]**	**Logistics**	**Administration, Finance and Control**
24.	Documentation attesting the conformity of products not directly sent to OTO MELARA but to another Supplier for product completion.		For info	For action		For info
25.	Nonconformity report for subcontracted or on-loan materials supplied by OTO MELARA (e.g. equipment), expired materials.	For info	For action Reply within **3 working days** of the report	For info		
26.	Spare parts list and all documents related to the product				For action	
27.	Technical charts for non-metallic materials and chemicals		For action	For info		
28.	Safety data form to be delivered with the first supply		For action			
29.	Shipment document		For action, and to make it visible to the other departments involved.	For info		For info
30.	Documentation envisaged for carrying out activities in OTO MELARA facilities	For action	For info	For info		
31.	Documentation envisaged for carrying out activities in shipyards for setting to work and service to OTO MELARA Customer	For info			For action	
32.	Invoice					For action. Paid according to the result of the Inward Quality Inspection

Note: OTO Melara departments which receive documents for action will distribute them to the other departments involved.

[8] STQ: Technical Services of Quality
[9] QPM: Quality Program Manager

5 IDENTIFICATION OF OTO MELARA REQUIREMENTS AND CORRELATION WITH SUPPLIER'S QUALITY MANAGEMENT SYSTEM

5.1 CLASSIFICATION

In the technical data package issued by OTO Melara, each item, unit, assembly, etc. reports an indication consisting of:

a. a numeric code identifying the criticality class in terms of safety (shown in the title block of the drawing and/or in the parts list)
b. a letter identifying the class of goods in terms of quality requirements (shown on a dedicated drawing legend and/or parts list).

For example:

A1 means: material critical for safety (digit 1) of Non-metallic indefinite material (letter A).

5.1.1 Criticality Level

The criticality level, which is shown on the drawings (additional legend) and/or the parts list or on an associated list, is a classification attributed to the item, unit or assembly according to the impact on mission safety or operations in case of failed or wrong operation, malfunction or yield.

The attribution takes the following into account:

a. Results of safety analysis conducted according to methods described in international standards and appearing on filed documents;
b. degree of mechanical stress or electric load;
c. degree of design maturity (derivation or otherwise of the item/assembly from systems, similar assemblies validated at the prototype stage or ones which have provided good proof of function/resistance and are therefore able to undergo comparative engineering analysis covering the requirements);
d. degree of technological/constructional, verification and/or testing difficulties.

The criticality levels are defined in decreasing order in Table 5.

TABLE 5 - CRITICALITY LEVELS

LEVEL	NUMERIC CODE
CRITICALITY LEVEL 1 – CRITICAL CLASS Parts, assemblies, operations and actions associated directly and indirectly with the safety of persons and the system; weapon parts directly subject to the firing gas pressure or associated with the projectile loading function or cartridge case ejection, and in general, highlighted by a Safety Analysis conducted according to the criteria prescribed in the applicable standards.	**1**
CRITICALITY LEVEL 2 – IMPORTANT CLASS Parts, assemblies or operations associated directly and indirectly with the mission functionality or difficult replacement in terms of time and cost.	**2**
CRITICALITY LEVEL 3 – COMMON CLASS In the absence of the conditions described for the two previous levels.	**3**

If the order or the contract or the specification cited do not define the safety criticality level, the Supplier is to apply the indications reported for items of safety criticality level 2 except for the case where the need to refer to safety criticality level 1 is clear.

5.1.2 Commodity classification in terms of quality requirements

The letter identifying the commodity classification in terms of quality requirements is shown on the parts list to be viewed by the departments which are to be informed.

TABLE 6 - COMMODITY CLASSIFICATION

TYPE OF PRODUCT OR SUPPLY	LETTER CODE
Non-metallic indefinite materials	**A**
Functionally-important non-metallic materials	**B**
Welded structures and mechanical components	**C**
Plant/systems	**D**
Manufacturing using subcontracted materials	**E**
Metallic indefinite materials and unfinished products	**F**
Castings	**G**
Forged and moulded parts	**H**
Electrical control panels, consoles	**I**
Screws, nuts and bolts	**L**
Welding material	**M**
Complete assemblies	**N**
Electrical and electronic components	**O**
Optical and electro-optical components and assemblies	**P**
Software	**Q**
Ammunition	**R**
Hydraulic or pneumatic components	**S**
Activities performed by Suppliers at the OTO MELARA plant (internal)	**T**
Services rendered by Suppliers at the Customer's facility (external)	**U**
Catalogue commercial parts - mechanical	**V**
Supplier developed military products available in a catalogue	**W**
Equipment	**Y**

Two examples of designation are reported as follows:

a. for OTO MELARA La Spezia plant
b. for OTO MELARA Brescia plant

a. an item obtained by machining, safety criticality level 2, commodity class for quality C (mechanical component) is designed as shown in the figure, with reference to the legend, additional legend dedicated to safety and quality classification, part list and order

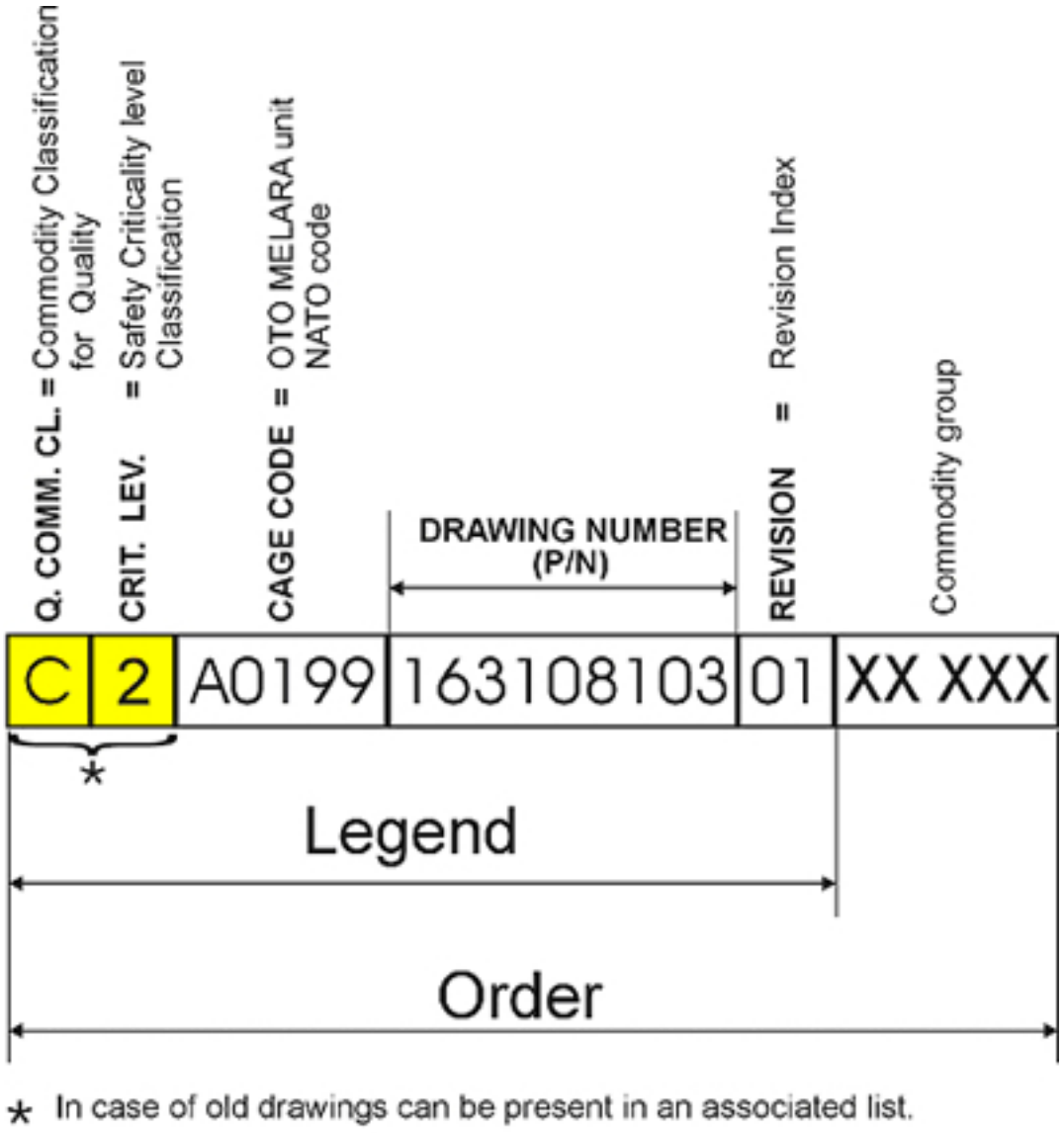

Figure 1 Example of designation (OTO MELARA, La Spezia plant)

b. a micro-fuse (drawing) in aluminium alloy with safety criticality level designed as shown in the figure with reference to legend, additional legend dedicated to safety and quality classification, part list and order

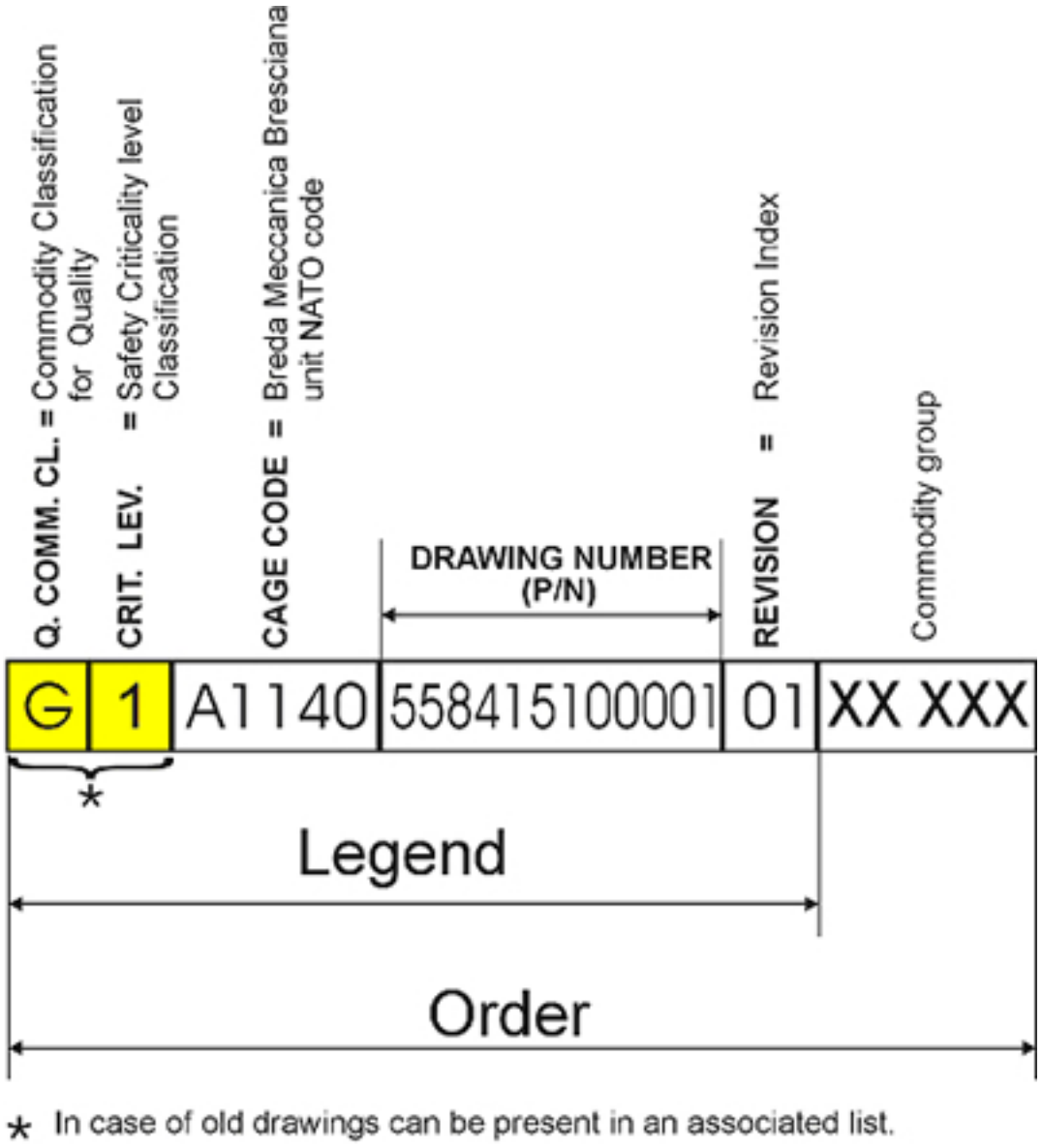

Figure 2 Example of designation (OTO MELARA, Brescia plant)

Note: <u>The commodity group is significant for OTO Melara internal processes only and is not disclosed to Suppliers</u>

5.2 IDENTIFICATION OF KEY CHARACTERISTICS ON DRAWINGS

In drawings key characteristics for items classified as 1 or 2 critical levels are identified by a symbol, triangle shaped (Δ), which contains the number corresponding to the assigned criticality class. For example, in some drawings, measurements may be identified as key characteristics.

The Supplier is to provide OTO Melara with evidence of records of key characteristics for each item together with the others listed in the control sheet ensuring that all checks on measurements as specified in the dimensional/parameter check sheet have been met

In the case of a nonconformity which has an impact on key characteristics, OTO Melara's incoming inspection will be immediately informed by the supplier to take appropriate decisions.

In addition to the provisions in Sec. 9 "Packaging and shipping", the key characteristics are to be adequately protected during handling and transportation.

5.3 APPLICATION AND LEVEL OF SUPPLIER'S QUALITY SYSTEM

The Quality System of suppliers to OTO Melara is to be in accordance with ISO 9001:2008 (EN/AS/JISQ 9100:2009 for Aeronautical products and AQAP 2000 series for NATO context) to be applied within the scope of the supply for OTO Melara; for this reason, the indications provided in this document are to be considered an integration with these standards and contractual requirements.

In general, once the Supplier's production capability related to the commodity class has been established, before it can receive orders relating to criticality level 1 items, it must have a Quality Management System certified by a recognised body (ISO, AQAP[10], AER-Q with a field of application appropriate to the activities to be performed for OTO Melara.

This is also desirable with level 2 items, in which case certification issued by OTO Melara Quality Assurance department can be considered sufficient. OTO Melara's Vendor Register will contain a list of Suppliers with specific competences, features and proof of qualification, which must be kept up to date by the Suppliers also filling in the dedicated questionnaire sent by OTO Melara Procurement Department.

5.3.1 Subvendor's Quality System level

Suppliers with orders of items classified as 1 or 2 in case of use of Subvendors are to ascertain their appropriate certification, consistently with indications provided in section. 5.3 above.

[10] Allied Quality Assurance Publication

TABLE 7 CORRESPONDENCE BETWEEN THE SUPPLY CRITICALITY LEVEL AND THE SUPPLIER QUALITY MANAGEMENT SYSTEM LEVEL

Criticality level	Supplier Quality Management System with certification covering activities requested by OTO MELARA	Notes
1	- ISO 9001:2008; - EN/AS/JISQ 9100:2009; AER-Q for Aeronautical products; - AQAP: - AQAP-2110 (NATO QA Requirements for design, development, production if design and development is envisaged); - AQAP-2120 (NATO QA Requirements for production if only production is envisaged); - AQAP-2130 (NATO QA Requirements for inspection and testing if only production is envisaged); - AQAP-2131 (NATO QA Requirements for final inspection if only production is envisaged) - AQAP-2210 (Additional NATO QA requirements for Software).	- Certification by a recognised third-party (ISO 9001:2008, EN/AS/JISQ 9100:2009) or second-party (AQAP, AER-Q). - AQAP requirements will be applicable in accordance with "AQAP-2009 Annex C" and to what reported in detailed prescription for each commodity class.
2	- ISO 9001:2008; - EN/AS/JISQ 9100:2009; AER-Q for Aeronautical products; - AQAP: - AQAP-2110 (NATO QA Requirements for design, development, production if design and development is envisaged); - AQAP-2120 (NATO QA Requirements for production if only production is envisaged); - AQAP-2130 (NATO QA Requirements for inspection and testing if only production is envisaged); - AQAP-2131 (NATO QA Requirements for final inspection if only production is envisaged) - AQAP-2210 (Additional NATO QA requirements for Software).	- Certification by a recognised third-party (ISO 9001:2008, EN/AS/JISQ 9100:2009) or second-party (AQAP, AER-Q). Alternatively: Suitable system structure (proved and certified by visits and audits by OTO MELARA personnel). - AQAP requirements will be applicable in accordance with "AQAP-2009 Annex C" and to what reported in detailed prescription for each commodity class.
3	- ISO 9001:2008; - EN/AS/JISQ 9100:2009; AER-Q for Aeronautical products; - AQAP: - AQAP-2110 (NATO QA Requirements for design, development, production if design and development is envisaged); - AQAP-2120 (NATO QA Requirements for production if only production is envisaged); - AQAP-2130 (NATO QA Requirements for inspection and testing if only production is envisaged); - AQAP-2131 (NATO QA Requirements for final inspection if only production is envisaged) (Manual and procedures adequate to activities as proven by vendor List.	- The Supplier must develop, document, implement and maintain a system that gives a high level of confidence that the items or services meet the requirements. - AQAP requirements will be applicable in accordance with "AQAP-2009 Annex C" and to what reported in detailed prescription for each commodity class.

N.B.:

1) If the order or the contract or the specification cited do not define the safety criticality level, the Supplier is to apply indications provided for items of safety criticality level 2 except for the case where the need to refer to safety criticality level 1 is clear.

2) If the Supplier has ISO certification only, it must integrate the Quality Plan with the NATO AQAP requirements listed in the "NATO Specific Requirements" of the AQAP applicable to the type of goods supplied. For aeronautical products, if the supply is subjected to AER-Q standards, the Quality Plan is to be in accordance with AER-Q-140.

3) The Supplier will be subject to periodic audits by OTO Melara Quality Assurance (and by its Customers or their Representatives when required) of its Quality System, and to an assessment in terms of supplies (Vendor Rating). The Supplier must implement any corrective actions as and when required.

5.4 DESCRIPTION OF OTO MELARA COMMODITY CLASSES

Description of the Classes:

N.B.: the applicability of quality requirements of this document requires items to be categorized through:

- a drawing, where classification can be reported (drawing legend)
- a list or other document referenced to the Bill of Materials
- the specific indication in the Purchase Order (following the indication reported by the requiring party in the request for purchase form) make the information explicit and available and thus determining the requirements.

It is evident that, for example, classes "A, B, D, E, M, V, W" dealing with standard parts, indefinite materials or incorporeal objects as for class Q (software) may not require a drawing intended as a graphic representation of the object but merely as a support where particular requirements or unequivocal definition of the Qualified Supplier can be reported.
In any case, it is essential for the proper management of the order, that the category to Which the item belongs is properly identified.

5.4.1 Non-metallic indefinite materials (A)

- hoses for compressed gases, flux gases, oils or fuels
- elastomers
- structural adhesive
- blocking thread adhesive
- synthetic materials (nylon, Viton®, PTFE, etc.)
- composite materials
- sheaths
- gaskets
- power cables
- painting products.

5.4.2 Functionally-important non-metallic materials (B)

Crew seats and protections, domes, flooring, panelling and armouring made of composite or ceramic materials, ferrules, etc..

5.4.3 Welded structures and mechanical components (C)

Turret casing, ballistic protections, frames, mountings, etc.;
parts made from indefinite materials for burr removal, cold forging, bending, rolling, etc.

5.4.4 Plant/systems (D)

An assembly of interconnected components and subassemblies, assembled functionally and/or physically to form a functional logic unit for the purpose of achieving performance.

5.4.5 Work using subcontracted materials (E)

Activities performed by the Supplier using its own equipment and resources on materials belonging to OTO MELARA or End Customer. Applicable also for Special Processes execution only. Partial activities carried out by Suppliers within OTO MELARA internal production process also belong to this class.

5.4.6 Metallic indefinite materials and unfinished products (F)

Sections, extruded items, laminated material, pipes made of carbon steel, stainless steel and light alloys.

5.4.7 Castings (G)

Unfinished products for specific applications obtained by casting.

5.4.8 Forged and moulded parts (H)

Unfinished products for specific applications obtained by forging and moulding.

5.4.9 Electrical control panels, consoles (I)

Assemblies able to develop specific functions autonomously or through interconnections with other assemblies.

5.4.10 Nuts, bolts and screws (L)

Mechanical linking/fastening elements capable of performing structural functions.

5.4.11 Welding material (M)

Materials used in welding processes: wire, coated electrodes, gas, fluxes etc.

5.4.12 Complete assemblies (N)

Assemblies of components or equipment designed to perform set functions in a plant or system; they usually provide set performances according to the Supplier's or OTO MELARA's design.

5.4.13 Electrical and electronic components (O)

Loose commercial components or Approved Source or QPL, assemblies or electronic boards. Harnesses.

5.4.14 Optical and electro-optical components and assemblies (P)

Components or assemblies that perform the function of panoramic vision, reconnaissance or aiming the weapon in the visible or infrared spectrum, whether or not equipped with stabilisation of the line of sight and coupled with laser pulse emitters for range finding. They are generally made by specialised firms to specifications approved by OTO MELARA.

5.4.15 Software (Q)

A set of programs, rules, procedures, documentation and data relating to the operations of digital calculator-based system.

5.4.16 Ammunition (R)

Parts of subassemblies forming the projectile shell, the fuse, any driving parts, energy generating components, batteries, cartridge cases, sabot, links; explosive charges, propellants, primers, artifices, complete ammunition, containers and carrying boxes.

5.4.17 Hydraulic or pneumatic components (S)

Parts or subassemblies for the generation and/or distribution of fluid energy: rigid pipes and hoses, pumps, pressure relief valves, sequence valves, pressure reduction valves, electric or mechanical directional valves, servo-valves, proportional valves, bladder and piston accumulators, cylinders, servo-cylinders, motors, angular motors, tanks etc.

5.4.18 Activities performed by Suppliers at the OTO MELARA plant (internal) (T)

A series of activities assigned to Suppliers who, as well developing the product at their own facilities, assembly it on the system on the OTO MELARA production lines.

5.4.19 Services rendered by Suppliers at the Customer's facility (external) (U)

A series of activities assigned to Suppliers having the organizational structure, means and skills to develop technical activities, installation and logistics at the facilities of the End Customer.

5.4.20 Catalogue commercial parts - mechanical (V)

Commercial mechanical parts which are functionally important reported in dedicated catalogues such as MIL specifications with part number beginning with MS, AN, NAS are to be produced by Qualified Producers listed (see https://assist.daps.dla.mil/). Those parts are not to be altered or subjected to modifications.

5.4.21 Supplier developed military products available in a catalogue (W)

Various military products such as: various calibre weapons or weapon systems reported in catalogues and technical specifications issued by the manufactures, suitable for installation on naval mounting or vehicle turrets or portable as armoured vehicle personnel equipment completion.

5.4.22 Equipment (Y)

The following main categories of equipment are identified:

a. machining equipment (YL)
b. test/inspection equipment (YC)
c. lifting equipment (YS)
d. logistic equipment (YM)

All equipment is to conform to applicable European Directives. Waivers are to be notified to OTO Melara and receive written approval.

5.4.22.1 Machining equipment (YL)

These are devices/fixtures allowing the execution of one or more mechanical machining by locking the work piece in position and orientating it as required; they may be equipped with clamping elements controlled mechanically, hydraulically or pneumatically, in which case they provide a man-machine interface for control purposes.

5.4.22.2 Measuring equipment (YC)

These are devices allowing verification of the geometrical, mechanical and electrical features. They may consist of parts subjected to internal pressure.
They allow the performance of a functional test with the relevant measurements if required.

5.4.22.3 Lifting equipment (YS)

These are devices used to lift the product in its final configuration or any parts thereof.

5.4.22.4 Logistic equipment (YM)

These are devices allowing the execution of maintenance tasks described in the maintenance plan developed for the product and/or troubleshooting of the equipment that makes up the system.

6 SYNOPTIC TABLES FOR COMMODITY CLASSES WITH RELEVANT REQUIREMENTS FOR ACTIVITIES AND DOCUMENTATION REQUESTED WITH THE SUPPLY AND RELATED TO THEIR CRITICALITY LEVEL

Requirements related to activities and documentation/certification to be supplied to OTO Melara are defined according to commodity and criticality classes (sections 5.4 and 5.1.1).

Requirements reported in the synoptic tables below are to be considered the minimum required by the Supplier in the absence of more precise indications or needs expressed by the Company function, in addition to the applicable "Quality System Level".

Requirements refer to different times/phases:

a. Before starting production (on acceptance of the order), in order to monitor inspect and control the manufacturing process, introduce possible corrections and integrations thus reducing the risk of a nonconformity; the documents relevant to this phase are for instance:
   - Quality Plan (PQ); Configuration Management Plan (CMP);
   - Manufacturing and Control Plan (MCP);
   - Acceptance Test Procedure (ATP);
   - Welding Procedure Specification (WPS);
   - The Design and development planning is divided into consequential phases with a finally critical design review at the end of every phase, prior to the start of the next stage, with an analysis of obtained results.

   Usually, the GANTT diagram may be a type of planning.

   These documents require OTO Melara approval and updating.

b. In the act of delivering manufactured items with the aim of having required quality evidences for instance: Certificate of Conformity and certifications. Test report of functional/dimensional/performance checks and various certifications, such as certificates stating the conformity of the characteristics of the materials used.

N.B.:

1) In making reference to the synoptic tables relevant to the applicable Commodity Class the Supplier is to carry out activities and provide documents and evidence as requested;
2) If OTO Melara's technical data package does not define the criticality level the Supplier is to apply the indications for items of safety criticality level 2 except for the case where the need to refer to safety criticality level 1 is clear;
3) In those cases when the Commodity Class of the item to be supplied is not referable to the synoptic tables, sections 1-9 apply;
4) Synoptic tables do not report documentation required by law described for some cases described in section 8.8, 8.9 (non-metallic materials and chemical technical sheets and safety data sheets);
5) When the supply consists of Design and Development activities the Supplier is also to apply the requirements of the specific product in accordance with Table 9;
6) Shelf life: The materials subject to wear must have, at the time of being received in OTO Melara, a residual life not less than 75% of the useful life specified by the manufacturer, unless otherwise specified by OTO Melara in the documentation accompanying the purchase order;

7) Unless noted otherwise in writing by OTO Melara, the supplier is to release and ship the documentations in accordance with the contractual conditions of the purchase order;
8) The supplier has to manufacture using approved process and methods. Any variations must receive prior authorization from OTO Melara;
   The supplier will bear the costs of new verification and validation since it is responsible for the change in the processes already approved; such as, moving the production plant;
9) For Special Processes OTO Melara must approve the entire chain of subcontracting, with the following clarifications:
   - All special processes are to be qualified and a plan for their periodic requalification is to be prepared;
   - When a Supplier is not responsible for product design and carries out Special processes in compliance with the requirements of OTO Melara, systems and procedures are to be approved by OTO Melara;
   - When a Supplier is responsible for the design of the product, this Supplier may use their approved special processes and their approved suppliers. These processes do not require approval from OTO Melara;
10) If not provided in the drawing, the criteria for item serialization is to be agreed with Quality Assurance/ STQ. Typically, a serial number must consist of:
    a. three letters which identify the supplier and
    b. four progressive numeric characters

    in order to ensure the identification and traceability of the products.
11) If the supplier works as an intermediary with other manufacturers or subvendors the following definitions are applied (see UNI EN 10204):
    - manufacturer: organization that manufactures the respective products according to the requirements of the order and to the properties specified in the referenced product specification;
    - intermediary: organization which is supplied with products by the manufacturers and which then in turn supplies them without further processing or after processing without changing the properties specified in the purchase order and referenced product specification;
12) In case of COTS items – Commercial Of The Shelf – a Certificate of Conformity (COC) is required, unless otherwise specified in the contract/purchase order;
13) Inform OTO Melara's Quality Department of any Non Conformities encountered in relation to suppliers under obligation to OTO Melara, and of any Non Conformities encountered with regard to the material used for sub-contracted work.

TABLE 8 INSTRUCTIONS FOR ACTIVITIES AND DOCUMENTS ACCORDING TO THE CLASSIFICATION (COMMODITY CLASSIFICATION AND CRITICALITY LEVELS)

CLASS	QP [11]	MCP [12]	COC [13]	FAI [14]	TT [15]	WPS [16]	SPC [17]	ATP [18]	PQR [19]	BT [20]	DCC [21]	QSL [22] (*)
Non-metallic indefinite materials												
A1		✓	✓[23]									ISO 9001/ AQAP-2131
A2			✓[23]									ISO 9001
A3			✓[24]									ISO 9001
Functionally important non-metallic materials												
B1	✓	✓	✓[23]	✓			✓	✓		✓[25]	✓	ISO 9001/ AQAP-2120
B2		✓	✓[23]	✓			✓	✓		✓[25]	✓	ISO 9001/ AQAP-2130
B3			✓[25]				✓	✓			✓	ISO 9001/ AQAP-2130

(*) N.B.: When provided for in the Order and in the case of Aeronautical products, the ISO 9001 Quality System Level is replaced with EN/AS/JISQ 9100; AQAP Quality System Level is replaced with the corresponding AER-Q

[11] **QP** Quality Plan always includes the MCP; **see section 8.4**;
[12] **MCP** Manufacturing and Control Plan; **see section 8.6**;
[13] **COC** Certificate of Conformity; **see section 8.10**;
[14] **FAI** First Article Inspection, to be repeated in the event of important manufacturing process or Suppliers change; it is mandatory for supplies of aeronautical products; **see section 7.6**;
[15] **TT** Type Tests (Qualification test); the cost of these is to be borne by the Supplier since they are applied to the products designed by the Supplier; **see section 11.2**;
[16] **WPS** Welding Procedure Specification; **see section 13**;
[17] **SPC** Applied Special Process Certificate (**see section 7.4)**: **HTC**: Heat Treatment Certificate: this can consist of certificates relevant to the obtained mechanical characteristics such as hardness, resilience, tensile strength, furnace, according to characteristics criticality level; **STC**: Surface Treatment Certificate; **NDT**: Non Destructive Tests;
[18] **ATP** Acceptance Test Procedure and relevant Test Report; **see section 7.7**;
[19] **PQR** Procedure Qualification Record (for welding- **see section 13**);
[20] **BT** Ballistic Test when required;
[21] **DCC** Dimensional Characteristics Certificate; **see section 8.6.1**;
[22] **QSL** Quality System Level; **see section 5.3**;
[23] **COC** Certificate of Conformity: supported by Inspection Certificate "type 3.1" according to UNI EN 10204 which is considered also applicable to non-metallic Certificate of Conformity;
[24] **COC** Certificate of Conformity (as an alternative for parts not based on OTO Melara requirements, Declaration of Conformity on "type 2.1" according to UNI EN 10204);
[25] When applicable;

TABLE 8 (CONTINUED)

CLASS	QP [26]	MCP [27]	COC [28]	FAI [29]	TT [30]	WPS [31]	SPC [32]	ATP [33]	PQR [34]	BT [35]	DCC [36]	QSL [37] (*)
Welded structures and mechanical components												
C1	✓	✓	✓ [38]	✓ (***)		✓	✓		✓	✓ [39]	✓	ISO 9001/ AQAP-2120
C2		✓	✓ [38]	✓ (***)		✓	✓		✓	✓ [39]	✓	ISO 9001/ AQAP-2120
C3		✓ (**)	✓ [40]			✓	✓		✓		✓	ISO 9001/ AQAP-2120
Plant/systems [41]												
D1	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	ISO 9001/ AQAP-2120
D2		✓	✓	✓	✓	✓	✓	✓	✓		✓	ISO 9001/ AQAP-2120
D3			✓				✓	✓			✓	ISO 9001/ AQAP-2130
Work using subcontracted materials [42]												
E1	✓	✓	✓	✓		✓	✓		✓		✓	ISO 9001/ AQAP-2120
E2		✓	✓	✓		✓	✓		✓		✓	ISO 9001/ AQAP-2120
E3		✓ (**)	✓				✓				✓	ISO 9001/ AQAP-2130

(*) N.B.: When provided for in the Order and in the case of Aeronautical products, the ISO 9001 Quality System Level is replaced with EN/AS/JISQ 9100; AQAP Quality System Level is replaced with the corresponding AER-Q.

(**) N.B: For basic cases (e.g. lack of Special Processes), it is permitted to use the MCP if agreed in writing with STQ OTO Melara first.

(***) N.B.: In the case of welded structure, the FAI must also be performed for the mechanical components that constitute it if not agreed otherwise in writing with STQ OTO Melara first.

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[26] **QP** Quality Plan always includes the MCP; **see section 8.4**;
[27] **MCP** Manufacturing and Control Plan; **see section 8.6**;
[28] **COC** Certificate of Conformity; **see section 8.10**;
[29] **FAI** First Article Inspection, to be repeated in the event of important manufacturing processes or Suppliers change; it is mandatory for supplies of aeronautical products; **see section 7.6**;
[30] **TT** Type Tests (Qualification test) charged to the Supplier when applied to products it has designed; **see section11.2**;
[31] **WPS** Welding Procedure Specification; **see section 13**;
[32] **SPC** Applied Special Process certificate (**see sec. 7.4**):**HTC**: Heat Treatment Certificate: can consist of certificates relevant to the obtained mechanical characteristics such as hardness, resilience, tensile strength, furnace, according to characteristics criticality level; **STC**: Surface Treatment Certificate; **NDT**: Non Destructive Tests;
[33] **ATP** Acceptance Test Procedure and relevant Test Report; **see section 7.7**;
[34] **PQR** Procedure Qualification Record; (for welding- **see section 13)**;
[35] **BT** Ballistic Test when required;
[36] **DCC** Dimensional Characteristics Certificate; **see section 8.6.1**;
[37] **QSL** Quality System Level; **see section 5.3**;
[38] **COC** Certificate of Conformity: supported by Inspection Certificate "type 3.1" according to UNI EN 10204 which is considered also applicable to non-metallic Certificate of Conformity;
[39] When applicable;
[40] **COC** Certificate of Conformity (as an alternative for parts not based on OTO Melara requirements, Declaration of Conformity on "type 2.1" according to UNI EN 10204);
[41] When assemblies are designed by the Supplier see also Table 9;
[42] Includes also intermediate manufacturing operation;

TABLE 8 (CONTINUED)

CLASS	MCP [43]	FAI [44]	CAC [45]	TSC [46]	ITC [47]	COC [48]	MA [49]	HTD [50]	HC [51]	BT [52]	REFERENCE STANDARDS	QSL [53] (*)
Metallic indefinite materials and unfinished products												
F1		✓	✓			✓[54]	✓			✓ [55]	In accordance with indications contained in order/ drawings or in their absence, UNI o ISO standards.	ISO 9001/ AQAP-2130
F2			✓			✓[54]	✓			✓[55]	"	ISO 9001/ AQAP-2130
F3			✓			✓[56]	✓				"	ISO 9001/ AQAP-2130
Castings												
G1	✓	✓	✓	✓	✓	✓[54]					In accordance with indications contained in order/ drawings or in their absence, UNI o ISO standards.	ISO 9001/ AQAP-2130
G2	✓	✓	✓	✓	✓	✓[54]					"	ISO 9001/ AQAP-2130
G3			✓			✓[56]					"	ISO 9001/ AQAP-2130
Forged and moulded parts												
H1	✓	✓	✓	✓	✓	✓[54]	✓	✓	✓		In accordance with indications contained in order/drawings or in their absence, UNI o ISO standards.	ISO 9001/ AQAP-2130
H2	✓	✓	✓	✓	✓	✓[54]		✓	✓		"	ISO 9001/ AQAP-2130
H3			✓			✓[56]			✓		"	ISO 9001/ AQAP-2130

(*) N.B.: When provided for in the order and in the case of Aeronautical products, the ISO 9001 Quality System Level is replaced with EN/AS/JISQ 9100; AQAP Quality System Level is replaced with the corresponding AER-Q

[43] **MCP** Manufacturing and Control Plan; **see section 8.6**;
[44] **FAI** First Article Inspection, to be repeated in the event of important manufacturing processes or Suppliers change; it is mandatory for supplies of aeronautical products; **see section 7.6**;
[45] **CAC** Casting Chemical Analysis certificate; **see section 7.7**;
[46] **TSC** Tensile Strength certificate; **see section 7.7**;
[47] **ITC** Impact test Certificate; **see section 7.7**;
[48] **COC** Certificate of Conformity; **see section 8.10**;
[49] **MA** Metallographic Analysis; **see section 7.7**;
[50] **HTD** Heat Treatment Diagram; **see section 7.4.5**;
[51] **HC** Hardness Certificate; **see section 7.7**;
[52] **BT** Ballistic test when required;
[53] **QSL** Quality System Level; **see section 5.3**;
[54] **CoC** Certificate of Conformity: supported by Inspection Certificate "type 3.1" according to UNI EN 10204 that it is considered also applicable to non metallic Certificate of Conformity;
[55] When applicable;
[56] **CoC** Certificate of Conformity (as an alternative for parts not based on OTO Melara requirements, Declaration of Conformity on "type 2.1" according to UNI EN 10204);

TABLE 8 (CONTINUED)

CLASS	QP [57]	MCP [58]	COC [59]	FAI [60]	TT [61]	WPS [62]	SPC [63]	ATP [64]	PQR [65]	BT [66]	DCC [67]	QSL [68] (*)
Electric panels, consoles [69]												
I1	✓	✓	✓	✓	✓			✓			✓	ISO 9001/ AQAP-2120
I2		✓	✓	✓	✓			✓			✓	ISO 9001/ AQAP-2120
I3		✓	✓					✓			✓	ISO 9001/ AQAP-2130
Complete assemblies [69]						[70]						
N1	✓	✓	✓	✓	✓		✓	✓			✓	ISO 9001/ AQAP-2120
N2	✓	✓	✓	✓	✓		✓	✓			✓	ISO 9001/ AQAP-2120
N3		✓	✓					✓			✓	ISO 9001/ AQAP-2130
Electrical and electronic components [71] [72]												
O1	✓	✓	✓	✓	✓			✓				ISO 9001/ AQAP-2120
O2		✓	✓	✓	✓			✓				ISO 9001/ AQAP-2120
O3			✓									ISO 9001/ AQAP-2130

(*) N.B.: When provided for in the order and in the case of Aeronautical products, the ISO 9001 Quality System Level is replaced with EN/AS/JISQ 9100; AQAP Quality System Level is replaced with the corresponding AER-Q

[57] **QP** Quality Plan always includes the MCP; it does not apply for commodity class "O" for catalogue commercial components; **see section 8.4**;

[58] **MCP** Manufacturing and Control Plan; it does not apply for commodity class "O" for catalogue commercial components; **see section 8.6**;

[59] **COC** Certificate of Conformity; **see section 8.10**;

[60] **FAI** First Article Inspection, to be repeated in the event of important manufacturing processes or Suppliers change; it is mandatory for supplies of aeronautical products; it does not apply for commodity class "O" for catalogue commercial components; **see section 7.6**;

[61] **TT** Type Tests (Qualification Tests); **see section 11.2**;

[62] **WPS** Welding Procedure Specification; **see section 13**;

[63] **SPC** Applied Special Process certificate: (**see sec. 7.4**): **HTC**: Heat Treatment Certificate: can consist of certificate relevant to the obtained mechanical characteristics such as hardness, resilience, tensile strength, furnace, according to characteristics criticality level; **STC**: Surface Treatment Certificate; **NDT**: Non Destructive Tests;

[64] **ATP** Acceptance Test Procedure and relevant Test Report; **see section 7.7**;

[65] **PQR** Procedure Qualification Record; **see section 13**;

[66] **BT** Ballistic Test when required;

[67] **DCC** Dimensional Characteristics Certificate; **see section 8.6.1**;

[68] **QSL** Quality System Level; **see section 5.3**;

[69] When assemblies are designed by the Supplier see also **Table 9**;

[70] For mechanical structures refer to Class "C" requirements;

[71] **Electric and electronic components:**

- If components are from stock and when the Supplier is a dealer, parts are not to have been manufactured more than 5 years before the delivery date (unless otherwise indicated in the order);
- If the Supplier is the Producer, parts are not to have been manufactured more than 5 years before the delivery date and a test report not older than one year is required;
- In case of obsolescence it is required that the status is declared together with the information about the date of production cessation;
- The broker is to provide a certificate of conformance of the whole supply, to which a copy of the certification originally issued by the manufacturer shall be attached.

[72] When the products are designed by the Supplier and they are not available in a catalogue, see also Table 9;

TABLE 8 (CONTINUED)

CLASS	QP [73]	MCP [74]	COC [75]	FAI [76]	TT [77]	WPS [78]	ATP [79]	PQR [80]	BT [81]	SPC [82]	DCC [83]	QSL [84] (*)
Ammunition [85]												
R1 [86]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	ISO 9001/ AQAP-2110/2210, AQAP-2120 [87]
R2	✓	✓	✓	✓	✓	✓	✓	✓	✓ (**)	✓	✓	" [88]
R3		✓ (***)	✓				✓			✓	✓	ISO 9001/ AQAP-2131
Hydraulic and pneumatic components [89]												
S1	✓	✓	✓	✓	✓		✓					ISO 9001/ AQAP-2120
S2		✓	✓	✓	✓		✓					ISO 9001/ AQAP-2130
S3			✓				✓					ISO 9001/ AQAP-2131
Catalogue mechanical parts												
V1			✓		✓		✓					ISO 9001
V2			✓		✓		✓					ISO 9001
V3			✓									ISO 9001

(*) N.B.: When provided for in the order and in the case of Aeronautical products, the ISO 9001 Quality System Level is replaced with EN/AS/JISQ 9100; AQAP Quality System Level is replaced with the corresponding AER-Q

(**) Some components may be individually subjected to ballistic tests as defined in the QP

(***) N.B.: For simple cases (e.g. lack of Special Processes), if agreed in writing with STQ OTO Melara, MCP cannot be done

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[73] **QP** Quality Plan always includes the MCP; it does not apply for commodity class "S" for catalogue commercial components; **see section 8.4**;

[74] **MCP** Manufacturing and Control Plan; it does not apply for commodity class "S" for catalogue commercial components; **see section 8.6**;

[75] **COC** Certificate of Conformity; **see section 8.10**;

[76] **FAI** First Article Inspection, to be repeated in the event of important manufacturing processes or Suppliers change; it is mandatory for supplies of aeronautical products; it does not apply for commodity class "S" for catalogue commercial components; **see section 7.6**;

[77] **TT** Type Tests (Qualification test); **see section 11.2**;

[78] **WPS** Welding Procedure Specification; **vedere section. 13**;

[79] **ATP** Acceptance Test Procedure: Acceptance procedure with Test Report; **see section 7.7**; not applied for the commodity class "S" in the case of commercial components off the shelf;

[80] **PQR** Procedure Qualification Record; **see section 13**;

[81] **BT** Ballistic Test when required;

[82] **SPC** Applied Special Process certificate (**see sec. 7.4**):**HTC**: Heat Treatment Certificate: can consist of a certificate relevant to the obtained mechanical characteristics such as hardness, resilience, tensile strength, furnace, according to characteristics criticality level; **STC**: Surface Treatment Certificate; **NDT**: Non Destructive Tests

[83] **DCC** Dimensional Characteristics Certificate; **see section 8.6.1**;

[84] **QSL** Quality System Level; **see section 5.3**;

[85] **Ammunition or its parts** produced with OTO MELARA Technical data Package **see section 14.1**; for standard ammunition (catalogue) see requirements at **section 14.2**;

[86] **Complete ammunition**; **see section 14**;

[87] **QSL** AQAP-2110/AQAP-2210 if supply contains parts designed by the Supplier; **see section 5.3**;

[88] **QSL** AQAP-2110/AQAP-2210 if supply contains parts designed by the Supplier; **see section 5.3**;

[89] When the products are designed by the Supplier and they are not available in a catalogue, see also Table 9;

TABLE 9 INSTRUCTIONS FOR DESIGN (SEE PROVISIONS TO ADOPT FOR DEVELOPING THE DESIGN IN COMPLIANCE WITH OTO MELARA REQUIREMENTS)

DESIGN	QP [90]	GANTT	CMP [91]	COC [92]	ATP [93]	TS [94]	LS [95]	V [96]	CDR [97]	QSL [98] (*)
1	✓	✓	✓	✓	✓	✓	✓	✓	✓	ISO 9001/ AQAP-2110/ AQAP-2210
2	✓	✓	✓	✓	✓	✓	✓	✓	✓	ISO 9001/ AQAP-2110, AQAP-2210
3	✓	✓		✓		✓	✓	✓	✓	ISO 9001/ AQAP-2110, AQAP-2210

Note 1: These requirements apply to all Commodity Classes when subject of design and development.
(*) Note 2: When provided for in the order and in the case of Aeronautical products, the ISO 9001 Quality System Level is replaced with EN/AS/JISQ 9100; AQAP Quality System Level is replaced with the corresponding AER-Q

TABLE 10 INSTRUCTIONS FOR COMPONENTS OF OPTICAL AND ELECTRO-OPTICAL ASSEMBLIES DESIGNED BY THE SUPPLIER

CLASS	QP	COC	ATP	TT [99]	DEDICATED TECHNICAL SPECIFICATIONS [100]	LS	V	CDR	QSL (*)
Components of optical and electro-optical assemblies									
P1	✓	✓	✓	✓	✓	✓	✓	✓	ISO 9001/ AQAP-2110/AQAP-2210
P2	✓	✓	✓		✓	✓	✓	✓	ISO 9001/ AQAP-2110/ AQAP-2210
P3	✓	✓			✓	✓	✓	✓	ISO 9001/ AQAP-2110 / AQAP-2210

See section: PROVISIONS TO ADOPT FOR DEVELOPING THE DESIGN IN COMPLIANCE WITH OTO MELARA REQUIREMENTS and Table 5.

(*) N.B.: When provided for in the order and in the case of Aeronautical products, the ISO 9001 Quality System Level is replaced with EN/AS/JISQ 9100; AQAP Quality System Level is replaced with the corresponding AER-Q

[90] **QP** Quality Plan inclusive of Design Development Plan; QP might contain the Configuration Management Plan and Gantt; **see section 8.4**;
[91] **CMP** Configuration Management Plan; **see section 8.5**;
[92] **COC** Certificate of Conformity; **see section 8.10**;
[93] **ATP** Acceptance Test Procedure and relevant Test Report; **see section 7.7**;
[94] **TS** Technical Specification; **see section 11.1**;
[95] **LS** Documentation for Logistic Support: Use and maintenance Manual, Illustrated Parts list;
[96] **V** Validation of design and development;
[97] **CDR** Critical design review to approve the supply. CDR is to be conducted by OTO Melara Design and Quality Assurance departments; **see section 11.1**;
[98] **QSL** Quality System Level to be applied; **see section 5.3**; in case of software development also AQAP-2210 applies;
[99] **TT** Type Tests; **see section 11.2**;
[100] **TS** Technical Specification exhaustively describing all performances, operational and storage environmental conditions and storage; **see section 11.1**;

TABLE 11 INSTRUCTIONS FOR SOFTWARE (SEE SECTION SOFTWARE FOR DETAILS)

SOFTWARE	QP [101]	GANTT	CMP [102]	COC [103]	ATP [104]	SVDD [105]	V [106]	QSL (*)
Q1	✓	✓	✓	✓	✓	✓	✓	ISO 9001/ AQAP-2110/AQAP-2210
Q2	✓	✓	✓	✓	✓	✓	✓	ISO 9001/ AQAP-2110/AQAP-2210
Q3	✓	✓		✓		✓	✓	ISO 9001/ AQAP-2110/AQAP-2210

(*) N.B.: When provided for in the order and in the case of Aeronautical products, the ISO 9001 Quality System Level is replaced with EN/AS/JISQ 9100; AQAP Quality System Level is replaced with the corresponding AER-Q

[101] **QP** Quality Plan inclusive of Design Development Plan; QP might contain the Configuration Management Plan and Gantt; **see section 8.4**;
[102] **CMP** Configuration Management Plan; **see section 8.5**;
[103] **COC** Certificate of Conformity; **see section 8.10**;
[104] **ATP** Acceptance Test Procedure and relevant Test Report; **see section 7.7**;
[105] **SVDD** Software Version Description Document
[106] **V** Validation certificate of design and development; **see section 12**;

Table 12 INSTRUCTIONS FOR SCREWS, NUTS AND BOLTS

CLASS	CAC [107]	HC [108]	VDCC [109]	COC [110]	REFERNCE STANDARDS	QSL [111]
FASTENERS (SCREWS AND NUTS) L						
RESISTANCE CLASS >8.8 AND DIA ≥ 8MM	✓	✓	✓	✓	In accordance with indications contained in order/drawings or in their absence, UNI o ISO standards.	ISO 9001/ AQAP-2131
RESISTANCE CLASS <8.8		✓		✓	"	ISO 9001
STAINLESS STEEL				✓	"	ISO 9001

TABLE 13 REQUIREMENTS FOR WELD MATERIAL

CLASS	CAC	MPC [112]	COC		QSL
WELD MATERIAL M	✓	✓	✓	Identification on wire/electrode container	ISO 9001/ AQAP-2130

TABLE 14 REQUIREMENTS FOR SUPPLIER DEVELOPED MILITARY PRODUCTS AVAILABLE IN A CATALOGUE

CLASS	TS [113]	V [114]	ATP [115]	LS [116]	COC	QSL (*)
W	✓	✓	✓	✓	✓	ISO 9001/ AQAP-2110/ AQAP-2210

(*) N.B.: When provided for in the order and in the case of Aeronautical products, the ISO 9001 Quality System Level is replaced with EN/AS/JISQ 9100; AQAP Quality System Level is replaced with the corresponding AER-Q

[107] **CAC** Casting Chemical Analysis certificate; **see section 7.7**;
[108] **HC** Hardness Certificate; **see section 7.7**;
[109] **VDCC** Visual/Dimensional inspection Certificate; **see section 7.7**;
[110] **COC** Certificate of Conformity; **see section 8.10**;
[111] **QSL** Quality System Level to be applied; **see section 5.3**;
[112] **MPC** Mechanical Properties Certificate; **see section 7.7**;
[113] **TS** Technical Specification inclusive of interface specification and installation drawings;
[114] **V** Validation certificate of design and development;
[115] **ATP** Acceptance Test Procedure and relevant Test Report; **see section 7.7**;
[116] **LS** Documentation for Logistic Support: Use and maintenance Manual, Illustrated Parts list;

TABLE 15 INSTRUCTIONS FOR EQUIPMENT DESIGNED BY THE SUPPLIER

CLASS	COC [117]	CEDC [118]	TD [119]	TC [120]	ATP [121]	UM [122]	QSL [123] (*)
Y Equipment/Fixtures							
YL	✓	✓	✓	✓		✓	ISO 9001
YC [124]	✓	✓	✓	✓		✓	ISO 9001
YS	✓	✓	✓	✓		✓	ISO 9001
YM	✓	✓	✓	✓	✓	✓	ISO 9001/ AQAP-2110/ AQAP-2210/ AQAP-2120 AQAP-2130 [125]

Also refer to the indications provided in the section: EQUIPMENT DESIGNED BY THE SUPPLIER

N.B.: 1: In the case of equipment designed by OTO MELARA, in addition to the provisions of the Purchase Order and the related technical documentation, the supplier is to apply indications provided for class "N" (N1 or N2 or N3; for metal structure refer to "C" commodity class requirements).
(*) N.B.: 2: When provided for in the order and in the case of Aeronautical products, the ISO 9001 Quality System Level is replaced with EN/AS/JISQ 9100; AQAP Quality System Level is replaced with the corresponding AER-Q.

TABLE 16 REFERENCES FOR COMMODITY CLASSES WHICH REQUIREMENTS ARE REPORTED IN DEDICATED SECTION

CLASS	SECTION RQA0001
T Activities performed by Suppliers at the OTO MELARA plant (internal)	**16**
U Services rendered by Suppliers at the Customer's facility (external)	**17**

[117] **COC** Certificate of Conformity; **see section 8.10**;
[118] **CEDC** CE Declaration of Conformity (in case of equipment designed by the Supplier under its responsibility); **see section 10**;
[119] **TD** Technical Dossier/Technical Documentation (in case of equipment designed by the Supplier under its responsibility, available on demand in accordance to the applicable European Directive); **see section 10**;
[120] **TC** Test Certificate; **see section 10**;
[121] **ATP** Acceptance Test Procedure and relevant Test Report; **see section 10**;
[122] **UM** User Manual, Parts list, etc. in accordance to the applicable European Directive; **see section 10**;
[123] **QSL** Quality System Level to be applied; **see section 5.3**;
[124] **YC includes also YP** used in previous versions of this document (up to RQA0001-02);
[125] **QSL for equipment YM:** if designed by the Supplier: ISO 9001/AQAP-2110/AQAP-2210;
If produced on the basis of Technical data package produced by OTO MELARA: ISO 9001/AQAP-2120/AQAP-2130;

7 DEFINITIONS AND GENERAL REQUIREMENTS

Additional requirements, specific for an order, can be established by OTO Melara in separate documents which will supersede this document.
Therefore, should a conflict arise with this document and the job order documents, the Supplier is to conform to the documents indicated in the job order.
The following sections, besides defining general requirements, aim to give an agreed meaning to terms and definitions used in this document. For all other cases ISO 9000:2005 e NATO AQAP glossaries apply.
In the case of Aeronautical Products and when provided for in the Purchase Order, the requirements of EN/AS/JISQ9100 take precedence over those indicated in the next paragraphs. Section 8 follows on from this one (general requirements for management of contractual documentation and documentation requested by OTO Melara).

7.1 RESPONSABILITÀ NELLA GESTIONE DEI SUBFORNITORI

A Supplier who decides to employ Subcontractors to carry out certain activities must guarantee that:

a. The Subcontractor has the necessary expertise and production capacity to complete the work concerned within the timeframe and in full compliance with the quality requirements;
b. All the requirements set down in this document that apply to the work carried out by the Subcontractor are met correctly and in full.

OTO Melara will in all cases consider the Supplier responsible for poor quality or any delays in the supply (including the documentation) and reserves the right to apply to the Supplier the penalties established in the Contract or Purchase Order.
The Subvendors must also guarantee control of the materials and of the equipment supplied to them under subcontract.

7.2 IDENTIFICATION AND TRACEABILITY

7.2.1 Identification

Identification means a system which, with suitable means (markings, punching, plates, tags, transport documents), allows identification of the type and denomination of the various products throughout the production process. Identification is assured by correlation between the physical products and the identification data shown on the markings. The Supplier is responsible for providing identification means for supplied product.

7.2.2 Traceability

Traceability means a system which allows each product or batch of products to be recognised and distinguished from other identical ones but made separately and under different conditions and at different times, and to be correlated with the documentation recording the processes, inspections and tests undergone by the system. The Supplier agrees to maintain throughout the production cycle adequate identification of the materials, components and anything else received for subcontracted work, and to ensure proper correspondence as explained in the preceding section.

7.2.2.1 Minimum Requirements
The system is to identify, at least, part origin, manufacturing date, lot and evidence of checks.

7.2.2.2 Identification Methods

For those items for which it is required the identification number is to be unequivocal. When traceability is required items and material lots are to contain an unequivocal identification such as serial number, lot number and date codes. Methods and marking position are to be indicated in technical documents.

7.2.2.3 Data retrieval

Records of items, material, processes and controls are to be identified to ease their retrieval.

7.2.2.4 Data preservation

The recordings must be kept in a safe and accessible place for at least 10 years. The recordings must be kept in a safe and accessible place at least 15 years, for documentation relating to components with critical level 1 and aeronautical products.

The recordings concerning the origins, the conformity and the shipping data of the product shall be maintained according to OTO Melara and mandatory requirements.

Specific data back-up and recovery procedures shall be defined for those recordings which are maintained in the electronic format. Above-mentioned recordings shall be stored in a protected environment in order to prevent not-authorized modifications and shall not be altered due to modifications to the system/software.

7.2.2.5 Traceability Plan

When applicable the Supplier is to prepare a traceability plan listing items and materials requiring serialisation and/or lot control explaining methods to ensure effective traceability.

7.3 STORAGE

All the necessary precautions must be taken to safeguard the integrity of the materials.

The following rules apply, in particular:

a. the warehouses must be suitable for protecting materials awaiting processing or despatching; the materials must be accompanied by the documents/tags specified in the internal procedures, allowing correct identification and verification of their test status
b. materials with a limited shelf life must be managed correctly
c. materials requiring controlled temperature and humidity must be stored in suitable areas
d. components which are sensitive to electrostatic discharge must be stored in suitable containers, in such a way as to safeguard their integrity (according to OTO Melara procedure PF-040-22)
e. materials supplied by OTO Melara for subcontracted work must be stored in a suitably identified area, according to their characteristics; these materials must be permanently identified by means of the associated Withdrawal order; materials with a limited life must be handled according to their expiry date; materials passed their use-by-date must be returned to OTO Melara Materials Management for replacement.

7.4 SPECIAL AND/OR CRITICAL PROCESSES

A special process is defined as a process the results of which cannot be fully ascertained by subsequent product inspections or tests, and defects of which are only revealed when the product is put into use or after it has been installed and has been subjected to use and/or

after some time from its delivery or commissioning, with permanence of the product in the environment of intended use.
A critical process is defined as a process which if not correctly carried out can induce risks for personnel safety and product integrity; a critical process can be also a special process.

OTO Melara considers the following processes as special:

a. welding and braze welding
b. heat treatments
c. gluing
d. painting
e. surface treatment
f. wiring of electrical equipment
g. hand and wave soldering of printed circuits, surface assembly soldering
h. forming of composite materials
i. Non Destructive Tests NDT

while the following is considered a special and critical process :
ammunition production.

For these processes OTO Melara requires:

- PROCESS QUALIFICATION/CERTIFICATION;

- PROCESS SPECIFICATION.

7.4.1 Process qualification/Certification

Qualification or certification of a process (by a third recognized body or by a company whose quality standards are known and recognized by OTO MELARA) means the ensemble of activities necessary to demonstrate that an operational procedure can cover those requirements reported in clearly identified international standards (such as UNI EN, ISO, DIN, SAE AMS, ASTM etc.)
The qualification activity can be carried out by OTO Melara or by bodies assigned by OTO Melara.
The Supplier is to attach evidence of qualification or certification to MCP (Manufacturing and Control Plan) when required.
The Supplier must send this documentation to OTO Melara prior to delivery of the first lot of the supply.

7.4.2 Process specification

This is a document which demonstrates that the Supplier's organization has absorbed the international standard (related to that process) or, if the process is proprietary an internal procedure containing operational parameters, technical requirements, methods for process control in order to meet product quality requirements.
This document is to be approved by OTO Melara Quality Assurance and made promptly available to operators in the relevant work place.

Unless otherwise specified on the drawing and/or order, OTO Melara special process specifications must be applied. Examples of identification codes by process are: OTO-RS (surface treatments); OTO-TT (heat treatments); OTO-PS (surface polishing); OTO-VE (painting); OTO-GO (rubber parts); PF (manufacturing processes), etc..
If the Supplier intends to adopt its own specifications, they must be submitted for approval to the OTO Melara Quality Assurance department (Materials Incoming Inspection and/or

Product Quality) within **30 days** of receipt of the order, and anyway before commencement of activities.

If the supplier undertakes to work on finished parts or sub-assemblies, the construction of which includes performing special processes not carried out in its company, the Supplier is obliged to use subvendors with appropriate qualifications as specified in the preceding section or to request a list of qualified subvendors from OTO Melara. After having verified and accepted, with objective evidence, as performed by its subvendor, the Supplier will provide OTO Melara with documentation relating to the quality of the processes implemented by qualified subvendors.

7.4.3 Welding

For welding please refer to the section: GENERAL REQUIREMENTS FOR WELDED JOINTS AND UNWELDED MECHANICAL/ELECTRICAL CONNECTIONS

7.4.4 Painting

When the supply includes painting not bound to OTO Melara specifications, the Supplier is to attach to the MCP, when required, the painting procedure inclusive of products technical sheets and indication of film thickness. If the MCP is not required the Supplier is to send the above mentioned documentation prior to the first lot delivery for OTO Melara Quality Assurance approval.

7.4.5 Heat Treatments

When the supply consists of Heat Treatment execution on blanks or parts machined at OTO Melara facilities or at the facilities of OTO Melara Suppliers, the indications provided in sections 7.3.1 and 7.3.2 regarding qualification level or procedure specification will apply. The Supplier is to produce the evidence related to the executed treatments by issuing the appropriate certificates.

When heat treatment is part of castings or moulded parts, the relevant evidence is to be delivered included in the required documentation.

When mechanical characteristics are determined by initial treatment (such as: austenitizing-quench-and-temper) the exact treatment temperature (i.e. tempering temperature) is to be recorded and made available in the delivery documentation to permit the accurate determination of possible further treatments (i.e. stress relieving) without altering the mechanical properties. Temperature vs. time diagram of the treatments that determines mechanical properties gives the required information.

The Supplier is to provide evidence that treatment equipment is controlled and adequate for the envisaged treatment:

- furnaces with their relevant qualified temperature ranges, thermal uniformity in the working zones (Pyrometry), type and atmosphere control;
- quenching systems and their control;
- equipment: hardness machines, testing devices, etc.

The OTO Melara Quality Assurance department will establish inspections for Supplier qualification. For that purpose a specific check list for the evaluation of Supplier's process conformity to applicable international standards are available. These check lists can be sent to Suppliers to be duly filled and sent back to OTO Melara Quality Assurance (Q/SQ Suppliers dept.) for evaluation.

7.5 TEST AND PROCESSING INSTRUMENTS/EQUIPMENT

The required instruments and equipment must be handled according to current standards (ISO 9001:2008, ISO 10012) or other standards if specified in the contract. The serial

numbers, the accuracy class and the expiry date of the test instruments and equipment calibration must be recorded on documents consigned to OTO Melara.
Special cases:

a. Gauges/equipment/instruments belonging to OTO Melara: except for the need to define, on the Purchase Order, who should carry out the periodic inspection of gauges/equipment/tools which may be supplied by OTO Melara, the Supplier is responsible for using them in a correct way respecting the maintenance deadlines provided and safeguarding their conservation;
b. Supplier's gauges and positioners used: these must undergo an initial test prior to use and periodic verification to confirm their validity.

The Supplier is to maintain the list of gauges/equipment/instruments belonging to OTO Melara duly updated.

7.6 EXECUTION OF THE FAI (FIRST ARTICLE INSPECTION)

The aim of the FAI is to provide objective evidence that design characteristics and requirements are appropriately understood, accountable, verified and documented. The documentation generated and submitted to OTO Melara will be based on recordings that allow checking the full compliance of the product with the applicable requirements, the assessment of the root causes of every nonconformity and the effective corrective action taken.
As part of the Aeronautical supplies and in the case of supplies that require application of EN/AS/JISQ 9100, the FAI must be performed on all products (except for catalogue products). The recognized reference standard is the standard SAE AS EN 9102 (Aerospace series - Quality systems - First article inspection).
The forms are available on the SAE website: www.sae.org/aaqg/publications/as9102af1.doc; www.sae.org/aaqg/publications/as9102af2.doc; www.sae.org/aaqg/publications/as9102af3.doc
As part of the Aeronautical supplies and in the case of supplies that require application of EN/AS/JISQ 9100, all the characteristics in the drawing must be verified; for other products it is possible to identify by agreement with OTO Melara the characteristics to be verified.
The FAI is the inspection of the first product/sample made, and must be carried out at the stage in which it is possible to verify its correspondence to the envisaged configuration, the compliance with the documentation which defines requirements and that all envisaged activities have been carried out and the correlated documentation has been prepared and defined in such a way to ensure repeatability of the manufacturing and control operations.
If the product supplied is an assembly, documentation is to report evidence of any constituting parts.

The FAI highlights details that are not visible and it is also the first verification of the correct manufacture of the product.

The FAI result (based on extensive documentation submitted by the Supplier or carried out in the presence of OTO Melara staff and possibly of the end Customer) is binding for the continuation of the series production. It will not be possible to proceed before the approval of the FAI by OTO Melara. The approval of the FAI results provides evidence that the production process, the production documentation and the equipment are suitable for producing parts and assemblies that meet the requirements.
The FAI is to be repeated and officially presented to OTO Melara, when changes occur which invalidate the original result (for example, engineering changes, changes to the manufacturing process, modifications to the equipment, changes of production facilities site,

changes of suppliers). In the event that the repetition of the FAI covers only parts of the product/process, it is called “partial repetition“ of the FAI.
In any case, the FAI is to be repeated in full after an interruption of production of two years, unless this deadline is not otherwise specified in the Purchase Order.

7.6.1 FAI execution method

The inspection takes place in the following stages:

a. verification of the identification of the product undergoing the FAI and its marking (by OTO Melara personnel when required)
b. verification of compliance with the applicable configuration, verifying the correspondence with the last revision of the drawings/lists and applicable specifications;
c. review of any nonconformity recorded (if any);
d. verification of the qualification of special and critical processes (welding, gluing, crimping, painting, heat treatments, surface treatments) and the personnel involved
e. verification of NDT personnel qualifications
f. verification of the quality of the raw materials (certifications of the chemical and physical properties
g. verification of the validity of the production equipment for the first product
h. inspection of the manufacturing and control support documentation
i. verification of application of the Manufacturing and Control Plan (MCP)
j. verification that the requirements of the key characteristics are satisfied
k. verification of component traceability
l. verification of the traceability of certifications and NDTs
m. dimensional checks and visual inspections
n. function tests and related procedures
o. aesthetic finish
p. weighing
q. inspection of the packaging and preparation for despatch.

7.7 INSPECTIONS AND TESTS

7.7.1 Inspections and tests conducted by the Supplier

Inspections and tests are to be carried out according to standards and regulations related to personnel safety.
The Supplier must perform and is responsible for all the tests and inspections specified in the contract documents and those developed by the Supplier (MCP) and previously approved by OTO Melara sending to OTO Melara the relevant certifications and test reports.
This is required regardless of whether OTO Melara’s or the Customer’s personnel are present at the Supplier’s facility.
Even when OTO Melara and the Customer do not attend tests and inspections but accept the supply on the basis of presented documents, this does not relieve the Supplier from product liability or from complying with the contract specifications.
Inspections and tests performed by OTO Melara and/or the Customer do not relieve the Supplier from its obligation to eliminate any defects or inconveniences found, in order to conform with contents of the subcontract documents.
The Supplier must guarantee the following when carrying out tests and inspections:

a. the use of suitable and, where applicable, qualified personnel
b. the use of test instruments and equipment of a suitable type and class, submitted to periodical calibration in accordance with the applicable standards
c. the use of test methods approved by OTO Melara.

The activities connected with development of the contract/order assigned to the Supplier and its Subvendors may at any time be subject to conformity verifications and checks by OTO Melara and the Customer in order to prove compliance with all the contract specifications in terms of methods, procedures and documentation in general.

7.7.2 Non-Destructive Tests[126] (NDT)

Non-Destructive Tests (NDTs) must be performed by personnel qualified according to UNI/ISO, ASTM[127] and AWS[128] standards or according to the Supplier's internal qualification procedures approved by a level III NDT operator.

NOTE: In the case of products not designed by OTO Melara, the Supplier must observe the specifications and relative NDTs required by the Company responsible for their design. These documents will be referred to in the Order/Purchase agreement.

7.7.3 Recording of activities

The Suppliers and Subvendors are responsible for the performance and recording of all the tests and inspections defined in the documents requested by OTO Melara. The document on which the tests and inspections are recorded must contain at least the following elements of definition:

a. Identification of the product subject to inspections and tests and its configuration (p/n, and s/n where required);
b. the types of tests/inspections conducted
c. a reference to the test method or the document followed for the activities
d. the test results
e. the instruments used, where applicable
f. the date of execution
g. the signature of the authorized persons

The defect repair or elimination data and the nonconformity reports must be recorded and remain at the Supplier's for consultation by OTO MELARA and/or the Customer.

The original records of the tests carried out must be provided together with the material and approved by the identified members of staff who have the necessary expertise and skills (when applicable). These records must be identified for the purpose of traceability of the materials, the characteristics of which have been verified (including the records of destructive and non-destructive tests).

7.7.4 Inspections and tests at the premises of the Supplier or Subvendor premises/supervision by OTO MELARA and the Customer

The Supplier or its authorized Subvendors must acknowledge that OTO Melara and the Customer (**in general the Italian Ministry of Defence or those of foreign countries or the Italian MoD representing that of foreign countries with mutual government assistance)** have the right to conduct inspections at their production facilities provided that reasonable notice is given. Furthermore, at the Supplier's document approval stage (MCP)

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126 These are tests performed to establish the integrity of a part or the success of a process using means of analysis that do not require the part to be sectioned or destroyed;

127 American Society for Testing Materials;

128 American Welding Society;

OTO Melara and the Customer have declared their intention to attend certain tests or manufacturing activities, the Supplier must summon in writing (e.g. fax) Quality Assurance manager of the OTO Melara production site involved with at least **10 working days'** notice.
The request for the presence of the Quality Assurance Manager sent by the Supplier in writing must contain the following details:

- a reference to OTO Melara contract/order
- the test item and a description of the test
- reference to the documents (MCP) with an indication of the phases:
    a. which require the binding presence of OTO Melara Quality Assurance and possibly the Customer for the continuation of the activities (point H);
    b. which must be notified by a certain notice given to OTO Melara Quality Assurance and eventually to the customer so that they may (at their discretion) be present (point W);
    c. in which a test report is to be issued(point R).
- the quantity to be tested, the place of execution of the test, the date of the test, and its expected duration
- the Supplier's contact for reference purposes
- the contact's telephone numbers.

In the case of the final inspection, the report must be provided together with the documentation available at the time (typically, the dimensional test report, the physical-chemical properties of the materials, any requests for exceptions, etc.) and required in the purchase order and these Quality Provisions.
The report must be sent to OTO Melara with 10 working days notice, in which time OTO Melara can ask to take part in the test activities or give its consent to supply on the basis of the documentation provided.

The Supplier or Subvendor must provide all the necessary means and assistance to allow OTO Melara and the Customer to operate at ease and under safe conditions.
If at the specified date the supply is not available for the envisaged tests and inspection, OTO Melara reserves the right to charge the Supplier all costs incurred for travel and personnel. OTO Melara may also charge the Supplier with personnel costs if tests are repeated in the case of retesting due to repeated nonconformities or defects occurring during the preparation and performance of the tests that are attributable to the Supplier, such as unsuitable instrumentation or test methods.
At the end of the tests, a report of the test results will be drawn up and countersigned by the Supplier and OTO Melara's representative (and the Customer's representative, if envisaged).
A copy of the test report will physically accompany the product to identify its acceptability status during despatch to OTO Melara (see for example the form in **attachment 1**).
In the case of testing with negative results, nonconformities are to be recorded and the product is to be resubmitted to OTO Melara after the Supplier has carried out the analysis of nonconformities and introduced appropriate corrective actions.

<u>The results of in-factory tests contribute to the Vendor Rating.</u>

The Supplier is required to always request authorization from OTO Melara Quality Assurance for shipping products, even if OTO Melara Quality Assurance doesn't require to attend the tests at supplier's premises. The request for shipping products shall be always accompanied by the documentation attesting the conformity of the products to the requirements.

7.7.5 Government Surveillance

The Supplier undertakes to admit Government Quality Assurance Representatives for activities envisaged in AQAP/AER-Q standards which, for some programmes, can be integrated with further requirements. For some contracts, when specified in the Purchase Order, the Government Quality Assurance is carried out in accordance with STANAG 4107 (Mutual Acceptance of Government Quality Assurance and Usage of the Allied Quality Assurance Publications) and NATO AQAP-2070 (NATO Mutual Government Quality Assurance-GQA-Process).

7.7.6 Work Progress Monitoring

The Supplier and its Subvendors are to make available all means and assistance so that the Organizations tasked by OTO Melara to carry out work progress monitoring, bearing in mind that the respect of the deliveries is monitored by the Materials Management Department, while the correct execution of the manufacturing and control phases is monitored by OTO Melara Quality Assurance department.
Consequently Materials Management is the interface with the Supplier for the possible supply of materials and equipment in manufacturing account, for the management of the product baseline (drawings, part lists and any requests for changes) and for all the logistic aspects of the shipment and delivery of the finished product. On the other hand, Quality Assurance is the interface with the Supplier for approval of construction documents prepared by the Supplier (plans and procedures) and for managing every quality aspect of the supply (including the management of any nonconformity and requests for deviation and/or waiver). The Quality Assurance department is also responsible for the final acceptance of delivery.
If the supply includes the design, the monitoring will be carried out by OTO Melara Design Department.

7.8 MANAGEMENT OF NONCONFORMITIES DETECTED BY THE SUPPLIER

A nonconformity is any departure of a product from the requirements set out in the technical documentation referred to on the order/contract.
The Nonconformity Report (NCR) is a document identifying and recording product nonconformities whose required quality evidence is indeterminate or unavailable or does not correspond to the applicable specifications or drawings referred to in the order.
For supplies that have been made according to the drawings and/or OTO Melara specifications, i.e. for which the Design Authority is OTO Melara (or in the case in which OTO Melara represents the gateway to another Design Authority, as for products manufactured under license), the Contractor is to notify OTO Melara Quality Assurance of any nonconformity found on its supplies to OTO Melara, in order to jointly assess the severity (major or minor) and the possibilities of acceptance.
For supplies that have been made according to drawings and/or specifications of the Supplier, i.e. for which the Design Authority is the Supplier, it must notify OTO Melara about any nonconformity which has impact on fit, form, function, performance, safety and spare parts.
For the resolution of the nonconformity, the Supplier must submit to OTO Melara Quality Assurance a reasoned request for acceptance in waiver or concession, containing at least:

- identification of the defective materials;
- description of the defects found or of the deviation;
- related causes;
- the proposed containment actions (repair/restoration of defective materials);
- the proposed corrective actions to prevent recurrence of the phenomenon.

This request, once approved by OTO Melara Quality Assurance, is to be recorded on the Certificate of Conformity relating to the materials in question.

Supplies (single or batch) affected by major nonconformities will be rejected in their entirety. In the case of supplies with one or more minor nonconformities OTO MELARA will apply the criteria for acceptance or rejection as defined in section 7.9.1.4.

Regular meetings will be conducted between the Supplier and OTO Melara Quality Assurance to analyze the nonconformities recorded on the products involved in order to identify corrective actions with effective improvements.

7.9 ACCEPTANCE INSPECTIONS AND TESTS AT OTO Melara FACILITIES

While the Supplier is responsible for providing products that are compliant and have been tested (unless stated otherwise in the Purchase Order), OTO Melara carries out, at its facilities, the acceptance tests required in relation to the nature of supply and in order to ascertain the quality of supply.

In particular, OTO Melara reserves the right to verify:

a. The compliance of the product with the requirements;
b. Its suitability for use;
c. Its configuration;
d. Compliance with the packaging requirements and condition of the containers used for transport;
e. The single quantities in relation to the batches;
f. The completeness and consistency of the required documentation provided with the supply;
g. The fulfilment of the requirements concerning the processing and traceability of the materials and substances used (e.g. REACH requirements);
h. In the case of exceptions or changes made to the product, the presence of the specific documentation required.

Note that verification of compliance with the requirements can involve the repetition of some or all of the tests already carried out at the supplier's facilities, such as the visual inspection and/or the instrumental testing of production quality, the physical-chemical properties of the materials, the colour, shape and geometry, the mechanical and electrical interfaces and the functional and performance characteristics.

Do not forget that OTO Melara reserves the right to reject non-compliant products or to request repairs or reworking. Non-compliant products will be removed or, whenever possible, repaired or reworked by the Supplier at the Supplier's own expense and in the shortest possible time. Products that are definitively rejected must not be presented to OTO Melara again.

7.9.1 Nonconformity

A departure from a specified requirement for any characteristic and performance.

A classification of nonconformity is given in the following. [129]

[129] Ref. MIL-STD-1916

7.9.1.1Critical Characteristic

A critical characteristic is defined as follows:

- a characteristic that judgment and experience indicate must be met to avoid hazardous or unsafe conditions for individuals using, maintaining, or depending upon the product
- a characteristic that judgment and experience indicate must be met to assure performance of the tactical function of a major item such as a ship, aircraft, tank.

7.9.1.2 Major Characteristic

A characteristic, other than critical, that must be met to avoid failure or material reduction of usability of the unit of product for intended purpose and the performance required.

7.9.1.3 Minor Characteristic

A characteristic, other than critical or major, whose departure from its specification requirement is not likely to reduce materially the usability of the unit of product for its intended purpose or whose departure from established standards has little bearing on the effective use or performance required of the unit.

7.9.1.4 Acceptance threshold

Critical or major non-conforming units will be rejected; if critical or major non-conforming units in a batch certified by the Supplier as conforming are found in the sampling examination the entire batch will be rejected and returned to the supplier, who will be charged for the costs.
In addition, in the event of minor nonconformities OTO Melara will return the entire lot of supply to the Supplier on the basis of the negative outcome of a test or return the products found non-conforming as a result of selection (a check on 100% of the items), and charge the Supplier for the cost of verifications.

The following table gives a general indication of the acceptance threshold related to lot, batch size, sampling, control level and criticality safety level. OTO Melara reserves the right to issue tables dedicated to the specific supply.

OTO Melara reserves the right to apply more strictly control criteria basing on the criticality level of the supply, on the level of risk of the supplier and on its Vendor Rating.

NUMBER OF ITEMS/SERIES INCOMING LOT	NUMBER OF ITEMS/SERIES SAMPLE	CONTROL LEVEL					
		CRITICALITY LEVEL 1		CRITICALITY LEVEL 2		CRITICALITY LEVEL 3	
		Ac	Re	Ac	Re	Ac	Re
2 – 10	2	0	1	1	2	1	2
11 - 30	6	1	2	2	3	3	4
31 – 100	20	2	3	3	4	4	5
>101	30 or more	3	4	4	5	5	6

Key to symbols:

Ac = Acceptance threshold: maximum number of acceptable minor non-conforming items per series for each incoming lot.
If the threshold is exceeded OTO MELARA will switch to reinforced sampling charging the Supplier with the relevant cost.

Re = Rejection threshold: maximum number of minor non-conforming items/series leading to rejection of the entire lot.

If non-conforming units are found in the course of the sample checks, but the products are required urgently for use or assembly, or to avoid production stoppages, OTO Melara may, after having informed the Supplier, decide not to reject the lot or batch and make a selection to use the conforming products/materials if any (see section 5.13); **the cost will be charged to the Supplier.** This solution does not, however, relieve the Supplier from its liability in connection with completion of the nonconformity remedy procedure.

OTO MELARA may reject non-conforming products or to ask for them to be repaired or reworked. Non-conforming products will be removed and, where possible, repaired or reworked promptly by the Supplier at its expense as soon as possible. Finally rejected products are not to be resubmitted to OTO Melara.

The results of Inward Quality inspections contribute to the Vendor Rating.

7.10 MANAGEMENT OF NONCONFORMITIES OF SUPPLIES DETECTED BY OTO MELARA

Nonconformities found by OTO MELARA:

a. at the Supplier's premises in the course of tests, inspections or audits
b. at the Subvendor's premises involved by the Supplier in making the product
c. at OTO Melara facilities during receipt of the goods or installation
d. at other OTO Melara Suppliers' to whom the Supplier has sent the product according to OTO Melara instructions
e. at the Customer's premises for reasons due to the Supplier

will be classified by OTO Melara in the NCRs, and communicated to the Supplier according to the following criteria:

- **NONCONFORMITIES CLASSIFIED AS "REJECT"**
  OTO Melara will return the product to the Supplier or prevent delivery to its facilities.

- **NONCONFORMITY CLASSIFIED AS "USE AS IS"**
  OTO Melara will manage the relevant activities related to deviation/waiver requests.

In both cases, OTO Melara's Administration, Finance and Control department upon the receipt of communication by the Procurement department will charge the Supplier for the expenses held for managing the nonconformity (including hours, materials and other technical costs).
The charged hours are determined on an objective basis.

- **NONCONFORMITIES CLASSIFIED AS "REPAIR or REWORK"**
  If a nonconformity is found at the Supplier's premises, it will be recorded and managed on site together with the Supplier according to the applicable procedure (in case of deviation/waiver).

If a nonconformity is found during Inward quality inspection OTO Melara will contact the Supplier to agree on the action the Supplier will take at the OTO Melara facilities using the product. If the Supplier fails to take action within the agreed time, OTO Melara will initiate the restore/repair procedure. OTO Melara's Administration Finance and Control department, on the basis of Procurement Department communication, will charge the Supplier the costs of the hours spent and the materials used to perform the repair or reworking activities and of the subsequent inspections (OTO Melara's standard hourly charge for the current year will be applied).

If the Supplier intervenes at OTO Melara facilities, it may, in agreement with the Operating/Production Department (in compliance with production planning) and with reference to the quantity of non-conforming products, agree whether to:

1. repair or rework the product with its personnel at the OTO Melara facilities or at its own premises
2. leave OTO Melara to repair or rework the product, in which case the Supplier will pay all the costs involved.

In case 1: The Supplier must ensure that OTO Melara's time schedule is met, regardless of whether the product is replaced at OTO Melara's facilities (in compliance with the rules for those working inside the factory) or on its own premises.

7.11 REWORK OR REPAIR ACTIVITIES RELATED TO NON CONFORMING PRODUCTS DETECTED AT THE FACILITIES OF OTO MELARA OR THE END CLIENT

7.11.1 Receipt

The Supplier must draw up a report on the state of any non-conforming materials/products returned by OTO Melara. Materials/Products under warranty must be accompanied by the "Nonconformity Report for Subcontracted Supplies". In other cases the Supplier must follow the instructions shown on the rework/repair order. Within its own factory, the Supplier must treat such products as if they were "materials supplied by OTO Melara in subcontracting" and identify them as non-conforming units.

7.11.2 Ascertainment Record for materials belonging to the Customer under repair or servicing

If the Supplier is requested to carry out servicing, repairs or updating materials belonging to an OTO Melara Customer, it is to issue an ascertainment record, signed by OTO Melara charged personnel (and by the Customer when required), regarding the status of the materials at receipt. That record is to be filed and delivered to OTO Melara together with test documentation.

7.11.3 Rework and Repair

Rework and repair activities, carried out in relation to those indicated by OTO Melara and noticed by the Customer are to be duly documented. If the product is under warranty, the record is to be on the "Defect Technical Analysis" form attached to the "Nonconformity Report for Supplied items" the form shall be filled with the required indications:

a. defect cause an/or observations of the OTO Melara Nonconformity Report
b. corrective and containment actions to prevent the recurrence of the nonconformity found.

Rework/repair operations must be performed (following the initial manufacturing/control cycle applied during production of the product in question) and

the Quality Requirements in the original order must be applied. When the nonconformity can be resolved by means of “Standardised Repair Procedures”, they must be officially approved by OTO Melara.

N.B.: In the context of EN 9100 and in the aeronautical field, the Nonconformities reported must be treated as a Customer complaint. OTO Melara expects immediate attention by the Supplier.
For defects/faults that occur on the products after delivery, the Supplier must ensure that:
- all components found to be defective are subject to a detailed process of investigation on the causes of the failure found;
- where the Product has not been returned, the Supplier must confirm that the drawings, the work cycles, the work orders, etc. have been reviewed in order to ensure that the defect found may not be repeated;
- upon receipt of a "Nonconformity Report"/"Repair Order" it must acknowledge receipt confirming that, as containment measures, all stocks have been checked and cleared from the defect recorded;
- where a failure survey report is required, the report must be submitted within 30 working days, or within 10 days if it concerns safety, from the receipt of the rejected Product, the report must contain in detail:
  - the containment action necessary to prevent that potentially defective products belonging to the same batch or manufactured with the same tools and methods are used, extending to check out any inventory stored in OTO Melara or at the Supplier, in order to exclude the possibility that they are affected by the same defect.
  - The corrective action to prevent the repetition of the product failure.

7.11.4 Testing

For each reworked/repaired product, the Supplier must perform the scheduled tests according to the procedures provided or drawn up by OTO Melara and approved by OTO Melara Quality Assurance. Objective evidence of these activities must be presented. OTO Melara Quality Assurance and the Customer, if necessary, has the right to attend the tests. The presentation at the tests must be carried out as described on the initial order pertaining to the consignment.

7.11.5 Documentation required

The materials supplied must be accompanied by the following documentation:

a. Ascertainment report, (which can be supplemented with the Failure Analysis form for materials/products under warranty)
b. The original Failure Analysis form completed in full to certify the rework/repair, detailing any corrective actions performed to prevent any recurrence of the nonconformity
c. the original test reports for the tests and inspections performed and their findings
d. other certificates referred to in the specific repair/rework order (if issued)
e. certificates required by OTO MELARA specifications for special processes, when applied
f. the rework/repair certificate.

If the certificates listed are not attached to the packing-list, the supply may not be accepted, in which case it will be returned and the costs will be charged to the Supplier.

The Supplier must procure, at its own expense, any subassemblies, components and materials required for the rework/repair activities and to preserve the documentation for at least **10 years** from the date of delivery, unless otherwise indicated in the purchase order.

N.B.: The rework/repair certificate must quote all the references of the order and the "Nonconformity Report for Subcontracted Supplies" and show at least the following declaration of conformity: **"It is hereby certified that the goods supplied have been reworked/repaired and comply with the specifications, the drawings and the order to which they refer, with the exception of the attached deviations, and they have been inspected and tested according to the terms and conditions and requirements stated in the initial order (no. …) or the specific order (no. …)".**

7.11.6 Notification of nonconformity related to products delivered - Quality Alert

The Supplier must send a statement of "Quality Alert" (written on its headed paper) to notify OTO Melara of any circumstances which may affect the integrity of the product previously delivered or any errors or lack of Use and Maintenance Manuals that may affect the use and/or maintenance of the product.

The information must be sent to OTO Melara, more specifically to:

- QA Manager.

- Design Manager;

- Manager of the Business Line involved / Programs Unit BMB.

7.12 LIABILITY FOR SUBCONTRACTED WORK (MATERIAL BELONGING TO OTO MELARA OR THE END CLIENT)

The Supplier may receive materials or equipment for subcontracted work in one of two ways:
- from OTO Melara
- from OTO Melara's Suppliers.

In both cases, the Supplier is responsible for ensuring the products received correspond, qualitatively and quantitatively, to the items listed in the accompanying documents and must inform OTO Melara of any discrepancies, shortfalls or damage.
The Supplier must report promptly to OTO Melara Materials Management any problems in assembling or using the product received, specifying the following:

a. the name of the Supplier or OTO Melara facility which has sent the product
b. the number of the transport document accompanying the product
c. the quantity affected by the problem found
d. a description of the problem found
e. possible corrective action to be taken.

OTO Melara agrees to provide precise indications of actions to be undertaken with the material within **3 working days** from the notification.

Subcontracted material supplied by OTO Melara must be identified as such during the storage stage and when it processing begins (it must be identified with the associated withdrawal order from the store). The same identification is to be maintained if the material is dispatched to Subvendors.

OTO Melara reserves the right to apply a penalty if:

1. the Supplier does not inform it promptly of any assembly or processing problems connected with the product delivered
2. The Supplier does not promptly report damage or quantity discrepancies between the product delivered and the delivery note.

In case 2: Administration Finance and Control department, will charge the Supplier the costs of the hours spent performing the repair or reworking activities and of the subsequent inspections.

7.13 ACCESS TO PREMISES AND DOCUMENTATION OF OTO MELARA'S SUPPLIERS AND SUBVENDORS

Refer also to the section Inspections and tests at the premises of the Supplier or Subvendor' ….

OTO Melara, its Customer and their designated representatives are entitled to carry out at the Supplier's main facility and operating units all the tests and inspections considered necessary to ascertain whether the supply and documentation comply with contract conditions, and to perform audits of the system and/or operating process.
The Supplier and its Subvendors must provide OTO Melara, the Customer and their representatives, the structures and personnel necessary to carry out the tests and inspections.

7.14 SPARE PARTS

7.14.1 Spare parts for technical support to validation tests

The Supplier must guarantee the availability of the spare parts required to support all the activities envisaged, from testing and commissioning of the first sample (or prototype) up until achievement of the performance targets, including the warranty period for the entire delivery.
The list of spare parts must be previously agreed with OTO Melara and drawn up by the Supplier prior to the first delivery. The list may be modified to meet the specific requirements of OTO Melara and its Customer. While this is being done, the Supplier must provide spare parts through the establishment of appropriate on-site stocks, which will be managed by OTO Melara but remain the property of the Supplier. These spare parts must be returned to the Supplier on termination of the contract, during testing, commissioning, the warranty period and the performance target verification period.
In the event of malfunctions, defects and/or poor quality verified by OTO Melara and/or the Customer, OTO Melara will inform the Supplier when it is necessary to intervene to replace a part.
If the Supplier is not available to perform the work in the time allowed, OTO Melara will replace and/or repair the part itself, when possible, or have the work performed by another party.
Intervention by OTO Melara or any third parties will not affect the Supplier's product warranty.

The faulty part if still covered by guarantee will be sent to the Supplier at its expense. The Supplier must produce a thorough Failure Analysis detailing the type of failure and the possible causes.
On completion of the repair work or the analysis, the Supplier must return the part to OTO Melara free of charge.

7.14.2 Spare parts included in the supply and/or in stock

The Supplier is to ensure the provision of a list agreed with OTO Melara based on the requirements of OTO Melara of its client, as well as spare parts available for a period of time equivalent to the estimated life of the product, when not specified otherwise by laws and/or sector regulations.

The spare parts list is to include:

1. spare parts relevant to assemblies/subassemblies designed by OTO Melara
   - Part Number
   - Weight and dimensions
   - Price.
2. spare parts relevant to assemblies/subassemblies designed by OTO Melara derived by a logistic analysis carried out by the Supplier
   - OTO Melara Part Number
   - Closest assembly (NHA)
   - Description (spare identifying title)
   - Code of the spare referred to type and use
   - Criticality code of the system related to failure of the item considered
   - Repair code (if can be repaired or not)
   - Quantity for nearest assembly
   - Spare total quantity in the system
   - Reliability datum (MTBF)
   - Expected life (for wearable parts)
   - Shelf life
   - Lot (minimum deliverable quantity)
   - Dimensions (length, width, height)
   - Weight
   - PLT (delivery time)
   - SMR CODE (code relevant to procurement type, substitution levels and repair of the spare)
   - Economic quotation of the spare
   - Indication of useful tooling for maintenance and relevant logistic information
   - Economic quotation of tooling mentioned in previous point.
3. Spare parts relevant to assemblies/subassemblies designed by the Supplier
   - OTO Melara Part Number if assigned
   - Manufacturer Part Number
   - Closest assembly (NHA)
   - FSCM (spare manufacturer NATO code)
   - Description (spare identifying title)
   - Code of the spare referred to type and use
   - System criticality code related to failure of the item considered
   - Repair code (if can be repaired or not)
   - Quantity for nearest assembly
   - Spare total quantity in the system
   - Reliability datum (MTBF)
   - Expected life (for wearable parts)
   - Shelf life
   - Lot (minimum deliverable quantity)
   - Dimensions (length, width, height)
   - Weight
   - PLT (delivery time)

- SMR CODE (code relevant to procurement type, substitution levels and repair of the spare)
- Economic quotation of the spare
- Indication of useful tooling for maintenance and relevant logistic information
- Economic quotation of tooling mentioned in previous point.

8 MANAGEMENT OF CONTRACT DOCUMENTATION AND DOCUMENTATION REQUIRED BY OTO MELARA

The drawings, the Quality Plans, the Manufacturing and Control plans, the Technical Specifications and any other documentation sent by the Supplier must be at least in the Italian language, and in any other language specified on the Order.
Printed documents must be delivered in reproducible form and in a form which can be scanned.
If the required documentation is not delivered, payment of the related invoices may be withheld. .
If any of the test documents/certificates (type, weight, chemical and physical properties, visual inspections and dimensional checks) are not presented, OTO Melara reserves the exclusive right to decide whether to perform the tests itself or have them carried out by an independent body, and the Supplier will be charged the costs sustained and damages for the delay.
For all painted components for which OTO Melara does not provide painting specifications, regardless of the criticality level, the Supplier must present the painting process in advance, including the technical specifications of the products and the thickness of the coats applied, together with the Manufacturing and Control Plan, if there is one, or the Conformity Certificate.
The documentation covering:

a. Qualification of the welders
b. Qualification of the welding procedures
c. Qualification of the operators for Non-Destructive Test;
d. Qualification of Special processes.

must be delivered to OTO Melara Quality (for verification and approval) only prior to arrival of the first lot referring to the same Order and the same job order, in the absence of events modifying the application of the documents (this documentation must be kept up to date for the entire duration of the supply and thereafter to keep the Vendor Register updated).
The documentation on Non-Destructive Tests must be consigned together with the test items.
When the contents of the typical Manufacturing and Control Plan have been approved by OTO Melara (see typical Manufacturing and Control Plan) , this document must be used by the Supplier for all deliveries, compiled for each manufacturing lot and a copy sent to OTO Melara together with the envisaged test reports.

If agreed in advance with the Quality Control of OTO Melara production site involved, the Supplier may, following approval of the typical MCP and in partial or total replacement of the personalised MCP, present a List of Tests and Inspections for each supply, as an abstract of the MCP approved and expressed merely as a sequence of the scheduled test and inspection activities.

On the Conformity Certificate the Supplier must specify the size of the Manufacturing lot delivered, even when it does not cover the entire quantity specified on the Order. The product serial number and/or the lot number must also be specified.

Manufacturing may not commence until the Manufacturing Control Plan (and the Quality Plan and the Configuration Management Plan when required) has been approved.
If these plans have been sent by the Supplier but have not yet been formally approved by OTO Melara Quality Assurance, the Supplier must formally ask OTO Melara Quality Assurance for authorization to proceed.

8.1 SECURITY OBLIGATIONS (CONFIDENTIALITY)

The Supplier must take all the necessary precautions to prevent distribution and improper use of documentation belonging to OTO Melara.
All the documents used must be considered confidential, unless otherwise classified. OTO Melara's property rights must be protected.

8.2 DOSSIER OF THE CONTRACT REQUIREMENTS AND RELEVANT CONFIGURATION MANAGEMENT

When the negotiations have been completed and the order confirmation issued, the Supplier must prepare and keep a dossier containing the following documents:

a. the order
b. the order confirmation
c. any changes to the order
d. the specific technical documentation referred to in the order (drawings, specifications, standards) and/or references to the documentation classified and kept according to the applicable rules
e. a list of the applicable documents with their revisions and proof of controlled distribution (within the Supplier's own organization and at the Subvendors' see for example **attachment 2**)
f. a copy of the latest revision of this document, with proof of transmission to any Subvendors
g. any dedicated technical documentation
h. documentation of nonconformities detected by OTO Melara in the course of acceptance tests and inspections (at the Supplier's and OTO Melara), with the analysis report and a plan of corrective/preventive actions and improvements.

All these documents must be kept up to date by an internal focal point formally designated and presented to OTO Melara inspectors when requested. If the documentation is not made available, OTO Melara personnel may decide not to accept the product/material.

8.3 REQUESTS FOR MODIFICATIONS TO TECHNICAL DESIGN DOCUMENTATION

8.3.1 Products made by the Supplier based on technical documentation supplied by OTO MELARA

The Supplier must strictly adhere to the technical documentation supplied by OTO Melara and is entitled to propose updates (design modifications) in order to improve the final quality and feasibility of the product, and to achieve cost reduction. Proposals must be submitted in writing to the relevant department of OTO Melara (see OTO Melara/Supplier documentation interface matrix).
OTO Melara will inform the Supplier whether the proposal is accepted or not (after internal processing by the relevant departments).
If the proposal is accepted, OTO Melara will send the Supplier the revised technical documentation with an indication of the introduction point.

The Supplier is to update the dossier of contractual requisites, record the introduction point agreed and the physical introduction of the modification (see example at **attachment 2**). **Actions taken by the Supplier in the absence of official OTO Melara documentation will not be acknowledged and the product will be rejected and all resulting costs charged to the Supplier**.

8.3.2 Products designed by the Supplier to OTO Melara specifications

In agreement with OTO Melara (please refer t the section PROVISIONS TO ADOPT FOR DEVELOPING THE DESIGN IN COMPLIANCE WITH OTO MELARA REQUIREMENTS), the Supplier may define a frozen design configuration (Baseline) and send OTO Melara a list of technical documents applying to that part of the design.
From this moment on, all design modifications must be handled in accordance with the subsection entitled Products made by the Supplier based on technical documentation supplied by OTO Melara.
OTO Melara will inform the Supplier of the modification coding method to allow introduction and configuration of the modification.

8.4 QUALITY PLAN

The Quality Plan, for the format and content of which please refer to the ISO 10005 and AQAP-2105 standards (AER-Q-140 in the case of supplies under the AER-Q standard), is the document in which the Supplier describes the organization, the operating and technical methods used and the stages in which it intends to develop the supply products in accordance with the requirements defined in the purchase contract issued by OTO Melara and in the documentation referred to therein, by the AQAP/ISO regulations applicable and by its own Quality System. This document issued in Italian (unless otherwise provided for by the Purchase Order), must be signed by the Supplier's Quality Assurance Manager and submitted to OTO Melara Quality Assurance for verification and approval within **60 calendar days** of the acceptance of the Order and prior to commencement of the work. If the Supplier fails to submit the documents in time, OTO Melara is entitled to reject the supply.
The document also describes the methods for managing relations with OTO Melara and lists the names of the people with specific responsibilities in the development and control of the supply.
For the entire duration of the supply, the Quality Plan must be kept up to date and submitted to OTO Melara from time to time for verification and approval.

The Quality Plan must always include the Manufacturing and Control Plan, and the Configuration Management Plan if there is one.
The Supplier's Quality function must perform audits to verify implementation of the Quality Plan and the any other documents envisaged (Manufacturing and Control Plan and the Configuration Management Plan).
The Quality Plan will also give objective evidence regarding the risk planning, including identification, analysis, check and mitigation.

8.5 CONFIGURATION MANAGEMENT PLAN

Configuration Management activities must be carried out in accordance with the requirements of applicable NATO standards **AQAP-2110 / AQAP-2120 / AQAP-2130 / AQAP-2210 / EN9100.**
Unless explicitly stated on the Order, the Supplier may associate the Configuration Management Plan with the Quality Plan to be submitted to OTO Melara for approval within **60**

calendar days of the acceptance of the Order, and prior to commencement of the activities. This Plan must set out the procedure governing the flow of information between the Supplier and OTO Melara and **develop the following requirements in particular** (applicable according to the type of supply): Identification of the Configuration, Configuration Control, Configuration Status Accounting, Configuration Audit.
The following must also be described (depending on the applicable AQAP standard):

a. The criteria for selection of the Configured Articles and their identification (arranged with OTO Melara);
b. The procedure for identifying the technical documentation (drawings, price lists) and the Items;
c. The procedure for coding the technical documentation and the part number;
d. The procedure for classifying the modifications and the relative evaluation criteria for amending the Part Number and/or the revision indexes, in compliance with the regulatory requirements concerning interchangeability of the materials;
e. The procedure for physical identification of the items;
f. The procedure for issuing and managing Baselines;
g. The criteria for classifying concessions/exceptions;
h. The procedure for communication with OTO Melara and with the GQAR for approval of major changes and concessions/exceptions;
i. The procedure for sending minor changes and concessions/exceptions to OTO Melara for notification and verification of correct classification.

8.6 MANUFACTURING AND CONTROL PLAN (MCP)

The Manufacturing and Control Plan is the document with which the Supplier plans the production process, identifies the tests and inspections to be performed and details the methods and the acceptance criteria. This document must be approved preliminarily by OTO Melara and the binding points requiring attendance by OTO Melara's and/or the Customer's personnel must be identified. The MCP must, where applicable:

a. contain elements identifying the document, the number, the subject, the dates of issue and revision, details of the product to which it refers, and approvals
b. list in sequence the macro-stages of manufacture and control and show references to the related documents (drawings, technical specifications, procedures, work cycles, control cycles, WPSs, defined as manufacturing dossiers)
c. provide a clear indication of those phases/operations intended to be assigned to subvendors and their certification level (with the evidence of the relevant control)
d. list the tests and certifications specified in the applicable technical documents
e. contain adequate certification concerning visual/functional inspection and dimensional checks;
f. indicate the persons responsible for performing the various stages of control and self-checking
g. specify the sampling plan
h. show, for each stage, the spaces that can be used by the Supplier, by OTO Melara and by the Customer to indicate their own binding points and/or notification points
i. show the Witness Points called W POINTS (a witness point is a stage of activity of which OTO Melara must be informed at a set time in advance)
j. show the Binding Points called H POINTS (a binding point is a stage of activity requiring the presence of OTO Melara)
k. show the Report Points called R POINTS (a report point is a stage of activity requiring the issuing of a test report).

By way of example please refer to indications provided in attachment 3.

8.6.1 Visual/Dimensional inspection Certificate

The certificate, form or report attests the positive outcome of visual and dimensional inspection and lists the results of check of those key characteristics agreed with OTO Melara and reported in MCP for item/product acceptance. For aeronautical products subjected to FAI the indications provided in the relevant section apply.
Characteristics are:

- Dimensions reported in the drawing
- Drawing notes referring to the material that constitutes the part
- Drawing notes describing heat and surface treatments or other parameters (i.e. tightening torques etc.).

If detailed indications are not available the criterion for determining the dimensions to be recorded is the following:
if NC machines are used for production of that part the lot produced can be considered as follows:

Characteristic	First part	Other parts of the lot
"machine obtained dimension[130]"	To be recorded in the form or certificate	Last part and some intermediate pieces To be recorded in the form or certificate
"Operator responsibility dimension[131]"	To be recorded in the form or certificate	Show, in the form or certificate, the results of the checks carried out on all the products manufactured

If the machine does not guarantee repeatability, key dimensions are to be checked for all machined parts
N.B.: if the last piece checked is out of tolerance, it is necessary to check all the pieces produced from the last inspection with positive result.
The certificate is to report at least:

- Supplier's logo or name
- Part Number
- Part serial Number
- Reference to NC machine part program (when applicable)
- Identification of the characteristic on the drawing
- characteristic, nominal dimension and relevant tolerance
- measured value
- instruments used with indication of calibration expiry date (see also section: TEST AND PROCESSING INSTRUMENTS/EQUIPMENT)
- applied process (i.e.: heat, surface treatment, NDT etc.)
- acceptance

130 "Machine obtained dimension": dimension obtained through machine precision and repeatability i.e. the distance between two holes, a profile etc. it is acceptable that the dimensions is verified on the first part machined as validation of NC part program;

131 "Operator responsibility dimension": dimension obtained through the skill of the operator, operator responsibility dimension (i.e diameter of a tolerate hole which depends on tool setting or sharpening) shall be checked for each part machined.

- signature of the person in charge.

8.6.2 "Typical" Manufacturing and Control Plan

See also MANAGEMENT OF CONTRACT DOCUMENTATION AND DOCUMENTATION REQUIRED BY OTO MELARA. "Typical MCP" means a plan with characteristics under subsection see MANUFACTURING AND CONTROL PLAN (MCP).
That is typical for a certain supply or recurrent in several lots of supply; this document can be used, following agreement with OTO Melara Quality at the preliminary supply definition stage, in replacement of the personalised MCP (called in short MCP) for the specific supply after its complete definition.

8.6.3 Check stamps

The Inspection and Production Stamps issued to authorized holders, must be recorded with the sample signature of the holder, and with the definition of the approval purpose for which the stamp is to be used.If the stamp is withheld for any reason, it must not be released again for at least six months and the reason of the withholding must be documented.If the stamp is lost this will require the withdrawal of the remaining stamps that bear the same identification for at least one year. An illegible stamp must be replaced.

8.7 DOCUMENTATION RELEVANT TO COMPONENTS WITH CRITICALITY LEVEL 1

If the supply comprises components identified as safety critical, in addition to what has been envisaged, the Supplier agrees to:

a. maintain for at least **15 years** from the end production date (referred to the product where the component is present) the orders and relevant variants, all documentation dealing with safety characteristic tests performed, modification required to the product or to the manufacturing process; manufacturing defects, test results. All the above also in the case of transfer to OTO Melara
b. deliver for each supply documents certifying material characteristics and controls relevant to the envisaged safety characteristics
c. point out promptly to OTO Melara Quality Assurance any possible safety characteristic failure
d. point out to OTO Melara Material Management change proposals relevant to items, components, materials or manufacturing or control process
e. record on manufactured products the Supplier name or identification code, the date or code of manufacturing. Manufacturing date is to indicate manufacturing month and year or the batch if several batches are produced monthly
f. be available for OTO Melara inspections related to organization effectiveness for what relates safety products
g. make Subvendors officially informed about OTO Melara's present quality requirements
h. make available to OTO Melara all documents related to safety components in case of ceasing activity.

For indications relating to products developed by the Supplier please refer to the section PROVISIONS TO ADOPT FOR DEVELOPING THE DESIGN IN COMPLIANCE WITH OTO MELARA REQUIREMENTS.

8.8 TECHNICAL CHARTS FOR NON-METALLIC MATERIALS AND CHEMICALS

The technical charts show the specifications of non-metallic materials and chemicals used in the supply.
The list of substances contained in the chart must cover at least the following:

a. painting products (paints, solvents, diluents, catalysers, fillers, etc.)
b. cleaning products (soaps, acids/alkalis, detergents, etc.)
c. adhesives and sealants (adhesives, putties, sealants, adhesion enhancers, etc.)
d. lubricants (oil, grease, cleaners)
e. welding materials (electrodes, welding wires, deoxidizing pastes, sealing compounds, insulation compounds, anti-adhesives, etc.)
f. composite materials
g. resins of various types
h. thermal and acoustic insulation, fire-retardant and self-extinguishing materials, etc.
i. special metal plates
j. technical gases
k. grinding products (metal or non-metal sand-blasting shot and cut wire, fluid lubricants and coolants, penetrating liquids, fuel oil)
l. products for purification systems (acids, alkali, etc.)
m. coolants
n. fire-extinguishing products (foam, dust, etc.)

These charts are to be delivered to OTO Melara Materials Management together with the first supply.

Moreover, in accordance with the standard EC 1907/2006, the Supplier is required to provide the identification codes for the products/materials supplied containing dangerous substances under the REACH standard (Registration, Evaluation, Authorization and Restriction of Chemicals) and the related safety data sheets.

8.9 SAFETY DATA CHARTS

These charts are used to reduce the risk of on the job accidents when handling and servicing materials or products; they are to be delivered to OTO Melara Materials Management together with the first supply. They are to contain and comply with applicable legal requirements. The information recorded on the charts must be entered clearly and concisely for easy consultation. Additional information may be required for special compounds, whereas for others this information may not be necessary or technically impossible to find; in any case this must be justified. Any changes made to the safety data chart must be communicated to the recipient of the document. The list of materials for which the chart is required must include consumables or maintenance and cleaning products. The sequence of the topics to include in the safety data chart is specified below:

- IDENTIFICATION OF THE PRODUCT AND MANUFACTURER

a. composition/information on the ingredients

- IDENTIFICATION OF HAZARDS

b. first-aid measures
c. fire-prevention measures
d. measures envisaged in the case of accidental leakage
e. handling precautions
f. exposure / individual protection
g. physical and chemical properties
h. stability and reactivity
i. toxicological information
j. ecological information
k. disposal conditions

l. information on transportation
m. other information.

The data must be provided on the label in compliance with the rules on classification, packing and labelling of hazardous products.

8.10 CERTIFICATION OF CONFORMITY TO OTO MELARA PURCHASE ORDER

The aim of the Certificate of Conformity is to state, under the direct and exclusive legal liability of the Supplier, that the supply complies with the technical and regulatory requirements specified in the purchase order and in the documentation referred to therein. The statement must be undersigned by the Supplier's legal representative or another person belonging to the Supplier's organization who has specific powers for the purpose (Quality Assurance Manager).

The Certificate of Conformity must contain at least the following elements:

a. Supplier's company name
b. address of the production plant/s
c. reference to OTO Melara's purchase order and subsequent modifications
d. order issuing date
e. definition of the type of product supplied
f. quantity of products covered by the declaration
g. identification of the manufacturing lot and, if applicable, the serial number (in sequence) attributed to individual end products to which the declaration refers
h. assembly drawing and relevant list (or parts list) with revision index, products ID;
i. elements required to define the product configuration status compared to the documents approved, with an indication of the release of the software installed
j. reference to the Quality Plan (where applicable), identified through the code and revision index
k. reference to the adopted Manufacturing Plan and Control (where applicable), identified through the code and revision index
l. nonconformities related to the delivered product the solution for which has been agreed upon with OTO Melara considered "use as is" or "repair" and consequently managed as "deviation/authorization"
m. references to the list of missing parts, if any, compared to the end product configuration
n. reference to FAI Report (as far as applicable), properly identified by means of "identification number" and "date";
o. certificate issuing date
p. signature of the authorized representative of the company
q. Declaration of Conformity: "It is hereby certified that the supply complies with the specifications, drawings and order to which it refers, except for the attached deviations, and that it has been inspected and tested according to the provisions and the requirements of the order"
r. Signature by the Government Surveillance in the cases provided for and of the relevant sections of the Certificate of Conformity drawn up according to the contents of STANAG 4107; Certificate of Conformity in accordance with Annex B of AQAP-2070.

Note 1: The Supplier is reminded to use as standard for its Certificate of Conformity the form reported as **attachment 4** or the one envisaged in AQAP-2070 **Annex B-8** (**which is mandatory when the Government Surveillance**).

8.11 FILING AND CONTROL OF THE DOCUMENTS RECORDING THE SUPPLIER'S ACTIVITIES

Documents recording the Supplier's activities must be kept available for OTO Melara and/or its Customer **for at least 10 years**, unless otherwise specified in the contract.

In the case of an item with **criticality level 1 and aeronautical products** the relevant documentation isto remain available for **at least 15 years**.

OTO Melara may request the documentation and certification at no extra cost.
If Quality/Assurance/Control documents or certifications are valid for or applied to more than one product, including ones of different type, the Supplier may only file them among its quality records for the first item by type of product.
It is necessary to use safe storage places for the documentation, to prevent deterioration and ensure traceability, such as, for example, fire resistant drawers, duplicate copies kept in other places.

All data stored by electronic means must be stored on reliable and safe support, regularly duplicated and checked for integrity.
Suppliers equipped with a computer system for documentation storage must have a procedure to recover the data, ready for application in the event of disasters; this must be defined, documented, implemented and regularly inspected for compliance.
In case of insolvency of the Supplier, he/she is required to deliver all relevant records to OTO Melara.

9 PACKING AND SHIPMENT

9.1 APPLICABILITY

The provisions covered by this section are applicable, unless otherwise indicated in the order, to all **outsourced raw** materials, **semi-finished products and end products made to drawing and purchased from the trade** (hereinafter simply referred to as materials) used for production and as spare parts.
The following provisions indicate the **minimum requirements** for packaging the supplies and if the packaging is incomplete or insufficient, **it is the Supplier's responsibility** to adopt the most appropriate solutions to avoid inconveniences, in order to prevent the risk of deterioration or damage of supplies.
If these requirements are not complied with, the materials supplied will not be accepted by OTO Melara Quality Assurance; any costs incurred for the protection of materials will be charged to the Supplier (Reporting through the Nonconformity Report for Subcontracted Supplies and Debit Note by Administration, Finance and Control).

9.2 LOGISTIC PACKING REQUIREMENTS

The materials must be packed in such a way as to preserve their integrity throughout all the logistic stages and warehousing, and to facilitate handling, storage and identification.
In line with the provisions of section 5.2 (identification of the key features in the drawings), the key characteristics should have been adequately protected during the handling and transport.

9.3 GENERAL REQUIREMENTS

These requirements always apply with the deviations and specific instructions indicated under the section entitled "Special Requirements".

9.3.1 Individual packaging

All the materials must be **packaged individually** as follows:

a. Material: polyethylene
b. Shape: bubbles or foam
c. Packaging: bag or suitable wrapping.
If the application of EN9100 is required, it is prohibited to use metal staples/clips or any other type of fastener (metal or otherwise) that could cause dust and/or debris to spread in the environment when the packaging is opened.

9.3.2 Transport containers

After individual packaging, the material must be placed inside or on a transport container of adequate size and strength, to be chosen depending on the weight and the shape of the cargo from the following types:

a. transport packing to the Supplier's drawing
b. wooden crates
c. cardboard boxes
d. pallets

The containers do not need to be new, however, they must not show any damage that might affect their integrity. For tracking purposes, it is advisable to mark them with the name of the sender.

Whichever solution is adopted, if the pack exceeds the maximum weight of **20 kg**, it must be provided with the **suitable interface** (wooden supporting pallets or the like) to allow **transport with a fork lift truck**.
The material must not protrude from the external shape of the container which, in turn must be free of any nails, chips or anything else that may cause harm to operators or jeopardize their safety.
Moreover, inside/on the transport container, **the material must be secured** using special devices which prevent the load from moving, without damaging it. Such devices must be chosen according to the weight and shape of the load, and these can be:

a. supporting saddles
b. rubber foam/plastic material templates
c. polystyrene foam or particles
d. straps/flexible films

If a single final transport container is used to transport different materials, it is necessary to provide as many appropriate **intermediate containers** as the types of materials loaded, in compliance with the requirements specified above.

Moreover, if the supply includes a kit made of partially pre-assembled parts, an **individual transport container** must be provided for **each kit.**

9.3.3 Identification

When delivered to OTO Melara, all the materials must be properly identified, with the markings, stampings, labels, tags and shipping documents, showing the following details:

a. Supplier's company name
b. OTO Melara Purchase Order number / reference and any other Variants
c. item number of the Purchase Order
d. OTO Melara Code / Part Number (obtainable from the order)
e. serial number / lot number or date of manufacture
f. description of the component
g. quantity

For the products subject to expiry, the relevant validity date must be recorded in particular for products made of elastomers the polymerisation data is to be reported (see OTO Melara procedure OTO-GO-00).

The requirements specified in this section do not apply to catalogue products with the Supplier's own marking/coding.
This identification must be applied on the outside of the intermediate/final transport containers.
A clear plastic envelope containing a copy of the shipping documents and required certifications is affixed on one of the external surfaces of the final container.

9.4 SPECIAL REQUIREMENTS

In the specific cases mentioned below, the following special provisions apply:

9.4.1 Small size parts to drawing

a) For small parts **weighing less than 0.1 kg** each, clear polyethylene bags can be used (thickness ≥ 0.2 mm)

b) for small **unpainted parts without deteriorating worked surfaces,** multiple packing in a single polyethylene bag, of the bubble or foam type, can be used up to a total weight of 0.5 kg.

9.4.2 Blanks

Except for micro-castings, no individual packaging is required for metal plates, rods, extruded items, castings or forgings.
The required protection can be obtained with the transport container.

9.4.3 Mechanical standardised parts (screws, nuts, washers, etc.)

Multiple packaging in an individual clear polyethylene bag (thickness ≥ 0.2 mm) weighing maximum 3 Kg.

9.4.4 Hydraulic-pneumatic materials

a) All the openings in the hydraulic components (motors/pumps, valves, drawers, rigid pipes/hoses, fittings, etc.) must be protected with plastic plugs of a suitable size; alternative solutions are not allowed

b) rigid pipes/hoses can be packed directly in/on the transport container, with a package that **differs for each type of pipe**; individual packing is also required in the case of painted rigid pipes

c) the hoses can be rolled up provided that the bending ray is not less than the minimum ray specified in the catalogue

d) the packing of rubber pipes must be provided with an identification card showing the pipe polymerisation/vulcanisation date, as well as the date of assembly of the fittings to the pipe (materials with a limited life)

e) on rubber pipes, even if in the absence of packing, the identification number is to be applied.

9.4.5 Electric/Electronic Materials

a) For electric/electronic normalised items, multiple packaging is allowed provided that the requirements indicated in the section LOGISTIC PACKING REQUIREMENTS are met;

b) The connectors of the equipment and cables must be protected with plugs provided or, if not provided, by plastic plugs of a suitable size. No alternative solutions are permitted;

c) The materials sensitive to electrostatic discharge must be kept and delivered in suitably-identified protective packaging, in accordance with the provisions of the OTO Melara's Manufacturing Procedure **PF-040-22;**

d) Inertial materials (gyroscopic platforms and gyroscopes) must be kept and delivered in suitably-identified protective packages, equipped with suitable shock detectors.

e) The equipment must be kept in appropriate containers to maintain its compliance with the requirements (ensuring the quality and preservation of the products to guarantee protection against the weather and environmental conditions).

9.4.6 Generic elastomers

These are the materials used, totally or partially, as elastomers except for hoses.

a) All the packages must be accompanied with an identification tag showing the polymerisation/vulcanisation date (materials with a limited life), following the instructions of procedure **OTO-GO-00**

b) The packages used for rubber gaskets must protect the contents from the sun and ultraviolet rays and from fluids (oils, fuels, water, etc.)

c) Multiple packaging is allowed with the following limitations:

- the parts must have the same drawing number and polymerisation/vulcanisation date
- the internal diameter must be ≤ 400 mm and development ≤ 1600 mm
- each package must not contain more than 20 pieces and weigh more than 100 kg
- Each part is to be individually packaged.

9.4.7 Trade materials

Standard packaging is allowed, provided that the requirements indicated in the section LOGISTIC PACKING REQUIREMENTS are met.

9.4.8 Ferrous end products without any protective surface treatment

Besides meeting the requirements indicated in the sections APPLICABILITY, LOGISTIC PACKING REQUIREMENTS, GENERAL REQUIREMENTS for these materials a protective treatment with Tectyl 900 (Valvoline Oil Company) must be provided in compliance with General Requirements.

9.4.9 Material despatched directly to another Supplier of OTO Melara

If the Supplier is requested to send the product to another OTO Melara Supplier, it is to observe the above packing and shipping instructions for the product (which will be identified as accepted) and is to send OTO Melara Materials Management and Quality Assurance the following documents:

a. a copy of the shipping document
b. the Certification required (which will therefore not be sent to the Supplier)
c. the Certificate of Conformity signed by the Quality Assurance Manager or his/her authorized representative (a copy must also be sent to the Supplier of the following activities, together with the materials/products).

If any of the above documents is missing, this will prevent OTO Melara from performing the inward quality control and thus paying the invoices. The absence of the certification, any mismatching of the certifying document with the product, values that are incomplete or differ from the expected ones will be cause for a Nonconformity Report and thus the suspension of the payment of the invoices.

10 EQUIPMENT/DEVICES DESIGNED BY THE SUPPLIER

This section supplements the requirements set out previously. For further details, reference must be made to the section APPLICABILITY. The term equipment means any item necessary to support the manufacturing / control / logistic support process.

The present document cannot be an alternative to the consultation and knowledge of European Community Directives which must be followed during the practical operations.

N.B.: If the design activity is developed by the Supplier under the responsibility of OTO Melara (based on a Requirement specification definition), the design process to be followed is defined in Table 9 while the documentation to be issued has to be supplemented with that required by the applicable European Directives (Table 15) and will be verified/approved by OTO Melara.

10.1 SAFETY REGULATIONS

Design, manufacturing and testing of equipment or a fixture (hereinafter: equipment) is to conform to European Directives (in case of CE marking) or, if the design does not require CE marking (unless specifically required by OTO Melara in the order), the equipment/fixture is to conform, with documented evidence, with indications provided in attachments 5, 6 and 7 of Legislative Decree No. 81 of 9th April 2008. This evidence is to be sent to OTO Melara together with documents required by law and by Table 15 of this document. For electric equipment European Directives always apply.

10.2 CE MARKING

CE marking, considered proof of the positive outcome of design, manufacturing and testing regulated activities duly documented, is necessary for use in OTO Melara facilities or for sale of:

- equipment which can be considered comparable to a machine (including lifting or load conditioning gears)
- equipment subject to pressure;
- electric equipment.

The CE label, once affixed, attests the conformity of equipment, electric equipment with applicable Directives and its safe usage.

As a general criterion the Supplier is to affix CE markings in accordance with applicable minimum requirements of the directive and is required to:

a. preventively verify, at specification and or design phase, equipment conformity with safety essentials requirements as per applicable Directive;
b. issue a declaration of conformity to be delivered together with the product;
c. prepare a Technical Dossier in accordance with the applicable Directive which is to be maintained and kept available according to law;
d. prepare a User Manual in accordance with applicable requirements to be delivered together with the supply (including information regarding possible residual risks).

10.3 DESIGN AND DEVELOPMENT

The Supplier is to observe the applicable Directives and give the relevant evidence for correct design approach in particular (where applicable):

- European Directive no. 2006/42/CE for machines;

- European Directive no. 1997/23/CE for equipment subject to pressure;

- European Directive no. 2006/95/CE for low voltage equipment (LVD);

- European Directive no. 2004/108/CE relevant to Electro-magnetic Compatibility;

- European Directive no. 1994/9/CE on certifications concerning equipment and protective system intended for use in potentially explosive atmospheres.

The Supplier is required to keep informed of any updates/supplements.

10.3.1 Technical Dossier (TD)

The Supplier must prepare a Technical Dossier demonstrating that the equipment complies with the requirements of the specific European Directives.
For the Technical Dossier content, the Supplier must refer to the relevant European Directive annex.

10.3.1.1 Risk analysis/evaluation dossier (RED)

The Supplier is to draw up a risk evaluation dossier in compliance with the applicable regulations (see as a suitable support UNI EN ISO 14121-1:2007, UNI EN ISO 12100-1:2009 and UNI EN ISO 12100-2:2009).

10.3.2 User Manual (UM)

The Supplier must issue a User and Safety Manual in one or more official European Community languages assuming the responsibility; to this end, it must insert in the instruction manual the words ‘Original instructions’ with a copy in Italian, (if it does not already exist); this translation must bear the words ‘Translation of the original instructions’.
Please refer to the applicable specific European Directive for indications on preparation and content. In general, the User Manual covers also the following:

a. installation
b. assembly
c. prearrangement for the installation;
d. setting to work
e. operation
f. maintenance and inspection plan
g. list of risks that cannot be eliminated at a design stage, with an indication of personal protection equipment
h. technical data, weight and dimensions
i. spare parts
j. interfaces (mechanical, electrical, hydraulic, pneumatic).

10.3.3 Special Processes

For execution of Special processes including welded joints used for assembling the various parts of the equipment, please refer to the indications provided in the sections SPECIAL AND/OR CRITICAL PROCESSES and NON-DESTRUCTIVE TESTS (NDT) and to applicable provisions of law.

10.4 TESTING

The Supplier must provide evidence of having performed validation and testing of the equipment/fixture with the public agency authorized to issue the related certificate; all the relevant documents are to be provided to OTO Melara together with the equipment/fixture supplied.

10.5 CE LABEL AND MARKING

The equipment/fixture is to be provided with a CE label in a visible area with legible and indelible inscriptions in accordance with applicable European Directives.

10.6 DECLARATION OF CE CONFORMITY

This is the declaration released by the manufacturer or its agent within the European Community certifying that equipment offered for sale observes all related essential health and safety requirements.. This documentation, which contains data required by applicable Directives is to be signed by a person authorized by the manufacturer or its representative and sent to OTO Melara together with the supply. Names and positions inside the Supplier organization are to be reported in full and in a legible form. OTO Melara reserves the right to ask the Supplier for the documentation attesting authorization to issue and subscribe that declaration.

11 PROVISIONS TO ADOPT FOR DEVELOPING THE DESIGN IN COMPLIANCE WITH OTO MELARA REQUIREMENTS

This section integrates previously defined requirements, please see the section APPLICABILITY. **The minimum documentation to be delivered to OTO Melara is listed in Table 9.**

The Supplier of a design activity based on OTO Melara requirements is to have a Quality management System in accordance with indications provided in section 5 according to the criticality level of the item or assembly to be developed.

a. With reference to AQAP-2110/ISO 9001:2008/AQAP-2210 (EN/AS/SJAC 9100:2009/AER-Q-2110 for aeronautical supplies) standards, it is necessary to meet the requirements regarding: design and development planning, input elements, output elements, review, verification, validation and control of modifications. If the supply includes software also see the section SOFTWARE.
b. The product must be developed and properly documented according to the applicable standards and with reference to the planning under the Quality Plan and the Configuration Management Plan.
c. In case of low complexity products or not safety critical OTO Melara Quality Assurance department will define with the Supplier possible deviations to the present document which will be dealt with in the Order and described in the Supplier's Quality Plan.

11.1 GENERAL

If the Order requires design activities to be developed, the Supplier must:

a. ensure possession of the physical, functional and performance interface requirements for the product to be supplied
b. define the aim of the design and the traceable internal requirements in a Technical Specification as well as higher level requirements
c. identify the critical and key design elements according to OTO Melara criteria (sections: Criticality Level and Commodity classification in terms of quality requirements).
d. develop and send OTO Melara Quality Assurance department (QPM and/or Quality Manager) and Design department within **60 calendar days from the Order receipt**, a Project Plan of the Design development (as part of the Quality Plan) containing the documents to draw up and the activities associated with:
    - the design and development planning (GANTT diagram) in accordance with AQAP-2110/ISO 9001:2008 and AQAP-2210 requirements (in case of Software development) and OTO Melara's requirements detailed at a macro activity level to ensure an effective project management (EN/AS/SJAC 9100:2009/AER-Q-2110 for aeronautical supplies) identifying and agreeing with OTO Melara clearly the points of formal verification in which, without the approval of OTO Melara, it is not possible to move to the next stage, including the verification of final acceptance of the project.;
    - the Design Reviews carried out both internally and jointly with OTO Melara (mandatory for Requirement Examination before and after performing the type tests/qualification.);
    - the strategy of the logistic project structure and identification of the Configuration Item (agreed jointly with OTO Melara);
    - the mode of coding the technical documentation and part number;
    - classification of the changes and evaluation procedure and their impact on the variation of the Part Number when they affect interchangeability;
    - the procedure for physical identification of the Items;

- the project verification and validation;
- the configuration management in accordance with the requirements under AQAP-2110 and STANAG 4159/EN 9100; In other cases, ISO 10007 must be observed;
- the identification and management of COTS HW/SW (Commercial Off-The-Shelf) components and modified COTS used in the design, with a description of any obsolescence management strategies to guarantee the support and compatibility of its products

e. subdivide the development stages of the assigned design, logically and sequentially (conceptual, final and executive design)
f. process the required technical documentation (specifications, functional diagrams, assembly and part drawings) connected with the different design development stages
g. execute and record the Design Review meetings, detailing the technical and interface aspects exhaustively and comprehensively
h. document the design verification and functional validation activities to provide proper confidence on the project, giving adequate evidence in a compliance table.
i. freeze the design or its values through appropriate documentation (drawings, lists and technical specifications), each identified with the related revision index, to determine the reference configuration (baseline)
j. process and update the design configuration through a careful analysis and application of the design modifications following freezing in accordance to what reported in section 6.3.2
k. use qualified calculation programs
l. use qualified personnel for specific activities
m. ensure adequate resources to execute the needs of the project, in order to respect the programmes agreed in the contract
n. handle any delays through effective recovery actions, promptly report any lack of information or discrepancies regarding the supply received, so as to prevent from being in a situation of delay which, in the absence of such information, will be charged by OTO Melara to the Supplier
o. ensure the interface with OTO Melara systems, in the development of reports in an electronic form, and promptly report to OTO Melara any (mechanical, electrical, electronic, software, CAD, CAE and CAM) interface problems arising from the development of the design and requiring OTO Melara's specific authorization before starting any related activity
p. provide OTO Melara with the elements and data that allow an evaluation of the consequences following authorisation to design changes involving the Supplier, at any title:
   - approval by OTO Melara of major changes with an impact on interchange ability (Form, Fit and Function)
   - information and possible reclassification of minor changes.

The activities will be concluded with the development of the Critical Design Review before and after type testing (qualification) and Validation. Design and Quality OTO Melara will need to approve the delivery.

The Supplier is not permitted to outsource activities indicated in the Order (unless previously authorized by OTO Melara).

11.2 TYPE TESTS

The purpose of the Type Tests (or Qualification tests) is to check the capacity of a device, machine or system to withstand the stresses of its operating environment and under limit conditions without sustaining damage and/or a decline in efficiency.

These include but are not limited to:

a) Testing of resistance to environmental stresses (heat, cold, thermal shock, dust, sand, saline mist, wind, rain, hail, relative humidity, sunlight, ice, mould);
b) Testing of resistance to stresses typically associated with the marine environment (splashing, movement of waves);
c) Testing of electromagnetic compatibility and interference (conducted and radiated emissions);
d) Testing of protection against electrostatic discharge and overvoltage caused by lightning (measurement of insulation and dielectric strength, measurement of contact resistance between metal parts, testing of earth connections);
e) Testing of resistance to stresses during movement, transport and handling (collisions, vibrations);
f) Testing of ballistic protection;
g) Testing of performance with the platform out of alignment;
h) Testing of performance with variation under load of the supply voltage;
i) Testing of fatigue strength of the materials;
j) Testing of resistance to wear and ageing of the materials;
k) Testing of durability;
l) Testing of fire resistance;
m) Testing of resistance to stresses caused by a nuclear explosion;
n) Testing of resistance to nuclear, bacteriological and chemical agents;
o) Testing of compliance with the safety requirements, with simulation of failure conditions.

The content of the tests is defined with reference to military and other rules in the general requirements of the product.

The tests for validation of the product are carried out solely on a representative sample for the purpose of configuration and mass production. If the tests are not successful, it is necessary to take corrective measures and repeat the aforementioned tests or carry out other tests that are duly documented.

The type tests must be defined in the quality procedures or in appropriate qualification procedures, identifying those to be repeated on a routine basis to ensure that the characteristics and performance of the product and, therefore, the efficiency of the production line, are maintained.

Note: in the case of major changes in relation to the qualified/approved configuration, the type tests must be repeated accordingly.

11.3 INSTRUMENTS USED BY OTO MELARA FOR COORDINATION AND SUPERVISION

OTO Melara intends to coordinate and supervise the design activity through:

a. technical meetings
b. approval of the Project Development Plan
c. participation in the Design Review
d. design expediting meetings and verifications

e. acquisition of design documents
f. acquisition of document lists defining the configuration baseline
g. approval plan verification and validation;
h. approval for analysis and reporting of calculation and dimensioning;
i. the participation in type testing and validation of the project;
j. system audits and process.

OTO Melara reserves the right to apply penalties for delays in the development programme or the lack of content in the required activities and entities according to the method laid down in the order.

In order to participate actively in the Design Review, OTO Melara (Planning and Quality) must receive the documents assessed during the Design Review at least **10 working days** in advance.

The participation of OTO Melara meetings, testing, design review and approval of documents, does not relieve the Contractor from liability regarding compliance with the contractual and legislative constraints on the design.

11.4 RAMS (Reliability, Availability, Maintainability and Safety) and LCC (Life Cycle Cost) REQUIREMENTS

For installations, systems and assemblies, the RAMS/LCC (qualitative and quantitative) requirements which the object of the supply must meet are specified in the RAMS/LCC specification issued by OTO Melara. Besides the requirement values, this specification indicates the mode of development of the RAMS/LCC analyses to be provided.

If this Specification is not issued by OTO Melara, the supply is to comply with the following standards:

- EN 50126 (national and European market)
- MIL STD 882
- MIL HDBK 470 (USA market)
- STANAG 4174 and ARMP NATO procedures (only if required in the contract).

In general, the required documentation includes, as applicable:

a. Safety Analysis divided in phases as per MIL STD 882
b. Reliability forecast analysis (format and contents to be agreed on with OTO Melara)
c. FMEA/FMECA analysis (format and contents to be agreed on with OTO Melara) or safety analysis (format and contents to be agreed on with OTO Melara)
d. Preventive and corrective maintenance analysis (format and contents to be agreed on with OTO Melara Logistics Support Engineering)
e. List of recommended spare parts under the warranty, to be determined in accordance with RAMS evaluations and OTO Melara Logistics Support Engineering (with an indication of the unit prices and the associated logistic data as defined in the section Spare parts included in the supply and/or in stock and required quantities for each year of warranty)
f. Average repair cost and time report.

11.5 COMPONENTS WITH SAFETY CRITICALITY LEVEL 1

If the design and physical construction of a product with safety criticality level 1 are required, the Supplier, besides the provisions in section 10.1 c), undertakes to:

a. keep for at least **15 years** from the date of end of production of the product on which the component is installed: orders and their variants, drawings and technical specifications; design reviews; all the documents proving the safety tests performed; requests for changes to the product or production process; reports of manufacturing

defects; test results. This provision also applies after cessation of the supply to OTO Melara

b. keep for each supply the documents proving the features of the material and tests regarding all the prescribed safety features
c. report promptly to OTO Melara Quality Assurance Department any anomalies found as regards the safety features
d. report to OTO Melara Design Department any proposed changes to parts and/or components, materials, and work and control processes
e. show on the component produced its name or identification code and the date or code of manufacture. The date of production must show the month and year of construction or the production lot if there is more than one lot per month
f. allow OTO Melara personnel to verify the efficiency of its organization in relation to the safety products
g. transfer these OTO Melara requirements officially to its subvendors
h. provide OTO Melara with full documentation on OTO Melara safety components should the Supplier cease its activity.

11.6 DESIGN PART LIST (BASELINE)

The Supplier must prepare and consign to OTO Melara a Part List covering the supply, structured according to “father-son” hierarchical logic, in tree form down to an elementary component level. The part’s tree must be provided on paper and a computer file (Microsoft Excel unless specified otherwise on the order) and must contain at least the following information for each part:

a. Identification of the hierarchical level
b. part code
c. description
d. revision
e. associated document code
f. quantity at an assembly level.

This Part List must be issued by the Supplier for the first time within 60 days of the formal or informal supply agreement and must be updated every two months up until completion of the supply, unless specified otherwise by OTO Melara.

11.7 SERIES PRODUCTION

All the requirements set out in this document apply in this case. The Quality Plan and the Configuration Management Plan will be updated and finalised at this stage in the product’s life cycle.

11.8 DRAFTING

For activities that cannot be strictly defined as design, i.e.:

- drafting of parts intended to become components of an assembly designed by OTO Melara
- new drafting of assemblies or parts for updating graphic or standards related to tolerance indication and representation convention
- three dimensional modelling (solid modelling) from old drawings

that lead to solid models or drawings identified as OTO Melara proprietary the supplier is to follow the OTO Melara rules for filling the drawing legend. The Supplier will also check the correspondence and consistency of the assemblies and parts designed with the original drawings (in case of redesigning) or with the assembly from which the new drawings are made (in case of redesigning special components or three-dimensional modelling).

12 SOFTWARE

If the supply includes software see also section PROVISIONS TO ADOPT FOR DEVELOPING THE DESIGN IN COMPLIANCE WITH OTO MELARA REQUIREMENTS.

If the supply consists of software only, the Supplier must guarantee the use of life cycle model organized in accordance with AQAP-2110/ISO 9001:2008 (EN/AS/SJAC 9100:2009 for aeronautical supplies), AQAP-2210, ISO/IEC 12207 and ISO/IEC 9126 standards, including at least the stages described below.

In any case, with reference to AQAP-2110/ISO 9001:2008/AQAP-2210, requirements related to design and development planning, input elements, output elements, review, validation and change control are to be met.

The methods and organization with which the Supplier intends to develop its activities must be defined in a Quality Plan, with the Configuration Management Plan attached to it.

12.1 SOFTWARE REQUIREMENTS

All the software requirements must be defined and documented in a “software requirement” specification. The specification is to trace the requirements defined at a higher level by OTO Melara. This document must describe the performance, architecture and make-up of the whole software design, and contain a block diagram showing single elements of the software configuration (modules) and their connections. Unless specified otherwise, a system control status diagram must also be included.

12.2 SOFTWARE IMPLEMENTATION

In this stage, the Supplier must define the software architecture, identify and specify the software modules, and write the code according to a standard development cycle that shall be in accordance with what reported in the “requirements specification”.

The documents should contain at least the following information:

a. a description of the software’s functions
b. the architecture of the software modules
c. the internal structure of the software processor
d. a list and a description of the software data inputs/outputs
e. requirements trace ability to the upper level
f. nonconformity management.

These documents must be approved by OTO Melara.

12.3 SOFTWARE MODULE FUNCTION TESTS

This concerns the software stages at each elementary level of the design in order to verify their correctness and compliance with the specifications. The documents issued during this stage must describe, to a level of depth agreed with OTO Melara and described in the Test Plan, all the procedures for the function tests that have to be performed on each module, and must report the results and nonconformity management.

12.4 SOFTWARE INTEGRATION

The various modules must be integrated and tested following the procedure envisaged in the Test Plan to prove that they comply with the system requirements. A dedicated Test Report is to be issued to give evidence of the related activities.

12.5 SOFTWARE INTEGRATION TESTS AND VALIDATION

All tests carried out are to be documented and recorded. The functional and performance requirements are to be specified and the test procedures carried out on the modules documented (as well as the requirement compliance matrix). The Supplier will provide at its own expense the necessary technical assistance for the integration of the modules in the

final product and for the solution of any compatibility and interface problems with other systems/subsystems/components. When required, the Supplier will be available to attend the joint integration, test and validation activities of its modules, that will be carried out at OTO Melara premises and/or at the final user.
Unless otherwise provided for in the Purchase Order, the Supplier will at its own expense provide the technical support necessary for the integration of the modules on the final product, both for the solution of problems of compatibility, and interface with other systems / subsystems / components.

12.6 SOFTWARE RELEASE

At the end of the validation tests and before the delivery of the software, the Supplier is to issue the Product Baseline which will contain all reference and documents that identify unambiguously the final product and maintain it during the life cycle of the OTO Melara product.
The Supplier will assure Configuration and obsolescence management for support and compatibility of its product.

12.7 MAINTENANCE DURING PRODUCTION STAGE AND AFTER SALE

Once the Baseline has been released the product enters the maintenance phase where it remains until the end of its life cycle.
In this stage the Supplier is responsible for change introduction. The Supplier must define and submit to OTO Melara for approval the criteria for selecting the tests to be repeated in the event of a modification (including non-regression tests of the performance). All the tests performed must be fully documented. The Supplier is also responsible for guaranteeing the logistic and organizational support required for on-site maintenance of its software products involving the following types of activity:

a. solving problems
b. modifying interfaces
c. expansion of the functions or improving performances

These maintenance activities must be recorded in the Configuration Management.

12.8 SOFTWARE OWNERSHIP

12.8.1 Software developed by the Supplier

The Supplier must ensure that the software supplied is entirely free of copyrights and licences and is provided with the necessary licenses, in order to run it without restrictions of any kind. The Supplier must provide evidence of the documentation containing the information required for software maintenance and, if specifically requested to do so, must hand over the source file (source code).

12.8.2 Commercial Software (COTS or Modified COTS)

The Supplier must ensure that commercial software used is well-established and validated by the market or by the producer and covered by regular and valid user license if it has an expiring date (unless unless otherwise specified in the contract) which allows its transfer to OTO Melara and end users, with no additional charges for OTO Melara and its customers and without any violation of applicable laws.

12.9 APPLICABLE REQUIREMENTS

The section defines the activities and documents to be developed in connection with the above stages (see **Table II** of section 11.10). The activity and document modulation criteria are established in relation to the **software awareness level** attributed by OTO Melara for

each supply in the technical specification covering software development activities or in the purchase order/contract (see **Table III** of section 11.10).

There are three awareness levels determined by criticality levels (1, 2 and 3) and they are defined on the basis of the following:

a. safety impact
b. integration complexity
c. development architecture
d. availability level
e. well-proven design
f. specific critical characteristics (ex.: for operation and mission);
g. maintainability throughout the life cycle of the product;
h. other important contract requirements.

If the purchase order/contract or the specification referred to does not define the above level, the Supplier must apply level 2.

The Supplier must send the Project Plan with the contents shown in **Table II** to OTO Melara for approval, **within 60 calendar days** of the date shown on the NTP (Notice to Proceed) or in the letter of assignment (both intended as contract documents) or in the purchase order/contract.

When OTO Melara formalises its relationship with the Supplier by means of several documents issued on successive dates, and therefore increasingly complete, the Supplier must refer to the date of the first such document.
The Project Plan must include the software activity development program and the expected dates of delivery of the documents required.
Table II establishes the types of documents required, with a brief indication of their contents and whether OTO Melara approval is required or not.
Table III details the application of the activities and documents according to the awareness level required and depending if the software product is included or not in a complex system (weapon system).

12.10 WORK PRODUCTS

The following sections report the deliverable Key Work Products which are elements to be consigned in a system/software acquisition.

12.10.1 Definitions

The Work Products (WP) referred to in this document are documents and other items produced and used by the Supplier, to design, build, test, validate, deliver and maintain the software or other equipment defined here that contains software.
Work Products can be divided into three main categories:

- **OR** – “Organization Work Products” are produced and used by the Supplier as general and standard guidelines for all projects, together with rules of application/adaptation.
- **PR** – “Project Work Products” are generated to plan, control and verify various stages of the defined project.
- **RE** – “Result Work Products (recorded)” are the result of the performance of all the activities of a defined project. They confirm that the activities are performed in accordance with the contents of the Project Work Products.

12.10.2 Description of the main Work Products and their use in system/ software development

Various Work Product Classes can be defined for each of the above categories. This classification is provided in **Table I** (of this section). There are various types of Work Products. Each type belongs to one or more Classes.

Table II shows a list of various Work Products, and their Classes, that are important for OTO Melara buying a system/software developed by a Supplier. Knowing the system/software purchased by means of the related Work Products enables OTO Melara to realise that the system/software is suitable for the intended use for which it was purchased and also enables to co-operate with the Supplier. As a minimum requirement, all the Work Products listed in **Table II** are made and used by the Supplier, but generally only some of them are sent to the Customer, depending on the degree of awareness of the system/product the Customer wishes to acquire. This is shown in **Table III**. Similar topics can be treated in the same document (as per the Quality Plan).

Table III lists the requirements for supplying Work Products to OTO Melara, expressed by three level of completeness: **1, 2 and 3** (according to criticality level), which also distinguish the status of "purchase of software only" from "purchase of the system".

- The letter "X" indicates to be consigned.
- If there are numbers or other words identifying the Work Product, or other letters or codes, then what has to be consigned is the Work Product applied to the element indicated.

In the Revision Documentation:

- Stages* indicates: System/Software Requirements, System/Software Architecture, Test and Validation Procedures
- Stages** indicates: Stages*, Software Design, Code, Test and Validation Plans, Test and Validation Reports

TABLE I WORK PRODUCT (WP) CATEGORIES AND CLASSES

WP category identification	WP category	WP class identification	WP CLASS
OR	**ORGANIZATION**	OR 1	Strategy
		OR 2	Standard/Procedure
PR	**PROJECT**	PR. 1	Plan
		PR.2	Requirements
		PR.3	Criteria
		PR.4	Product (Design, Code, Programs, data structure)
		PR.5	Material delivered in advance
RE	**DOCUMENTATION**	RE. 1	Report
		RE.2	Module compiled
		RE.3	Minutes of meetings

TABLE II – TYPES OF WORK PRODUCT (WP)

N.B.: The wording "Test" is to be intended as applicable to SW supply only

WP	WP CLASS	Type of Work Product	Description	Approved by OTO MELARA (Y=Yes or N=Not)
1	OR.2	System, life cycle software	Description of the System/Software development stages, their inputs/outputs and the correlation between stages.	N
2	OR.2	Coding standard	Rules applied for writing the software source code (style, restrictions, use of notes).	N
3	PR.1	Project/ Development Plan	Description of the aims, activities, dependences, resources, times, responsibilities, system/software development and production inputs and outputs.	Y
4	RE.3	Minutes of meeting (general)	Interventions and important decisions passed at the meeting. General: this applies to each subject referring to a project.	N
5 **5a**	RE.1 RE.1	Analysis result (general) Sw safety analysis	Results from the analysis of a work product according to defined criteria. General: this applies to each WP. Sw safety analysis of the whole product	-Depending on the WP -Y
6	OR.1	Project risk management strategy	Organizational rules to identify, analyse, manage any project risks	Y
7 **7a**	OR.1 PR.1	- Quality strategy - System and Software Quality Plan	This defines the quality objectives and the means and resources to control and facilitate their achievement.	-N -Y
8	RE.1	Review of documents (general)	Report on the review of the results of each project stage or activity. General: this applies to each stage or activity.	The approval depends on the stage with reference to indications provided in the Quality Plan
9 **9a**	OR.1 PR.2 PR.1	Strategy /Re-utilization requirements Re-utilization plan	This sets out the rules, requirements and limitations for the reuse of a system/software. This defines the re-utilisation objectives and actions/resources in order to achieve the set objectives.	-N - Y
10 **10a**	OR.1 PR.1	-Acquisition strategy -Acquisition plan	This defines the objectives, rules and interventions for acquiring system / subsystem / software from external sources (sub Suppliers).	-N -Y
11 **11a**	PR.2 PR.2	-System requirement specification -Software requirement specification	This defines the architecture, performance characteristics, and the quality of the system/software to develop or purchase on the basis of OTO MELARA requirements.	-Y -Y
12	PR.2	Software design specification	This defines the main components of the software to develop and their external/internal interfaces.	Y

QUALITY REQUIREMENTS FOR SUPPLIES TO OTO MELARA S.p.A.

WP	WP CLASS	Type of Work Product	Description	Approved by OTO MELARA (Y=Yes or N=Not)
13	PR.4	Software design	This defines the main software components to develop (to be traced) and their external/system/internal interfaces.	Y
14	OR.1	- Test strategy/validation	- This defines the objectives, criteria, techniques, activities. In general it applies to all levels of test/validation.	-N
14a	PR.1	- Test/Validation plan (general)	- This defines the test objectives of a defined project and the activities, resources and techniques, the revised input and output data, the test pass/fail criteria. General: this applies to all test levels (unit, integration, system, acceptance).	-Y
15	OR.1	- Unit test strategy	- reproducible Test strategy (WP 14) applied to a software component, in general an executable unit.	-N
15a	PR.1	- Unit test plan	- Test plan (WP14a) applied to a software component, in general an executable unit.	-N
16	OR.1	- test strategy/integration test	- Test strategy (WP 14) applied to the system intended as a progressive components aggregation.	-N
16a	PR.1	- test strategy/integration test plan	- Test plan (WP14a) applied to the progressive components aggregation.	-Y
17	RE.1	Software Validation	Verification of requirement achievement (the Report shall trace all requirements at various level).	Y
18	OR.1	- System test strategy	- Test strategy (WP 14) applied to the entire system.	-N
18a	PR.1	- System test plan	- Test plan (WP14a) applied to the entire system.	-Y
19	OR.1	- Regression test strategy	- Test strategy (WP 14) applied to check whether a change to the software affects the system performance.	-N
19a	PR.1	- Regression test plan	- Test plan (WP 14a) to check whether a change to the software affects the system performance.	-Y
20	OR.1	- Acceptance test strategy	- Test strategy (WP 14) applied to the entire system for validation by the Customer.	-Y
20a	PR.1	- Acceptance test plan	- Test plan (WP14a) applied to the entire system for validation by the Customer.	-Y

QUALITY REQUIREMENTS FOR SUPPLIES TO OTO MELARA S.p.A.

WP	WP CLASS	Type of Work Product	Description	Approved by OTO MELARA (Y=Yes or N=Not)
21	PR.3	Test procedure (general)	Operative description of test plan actuation. General: this applies to each test level.	Y
22	RE.1	Test report (general)	Results of the execution of a test procedure. General: this applies to each test level.	Y
23	OR.1 PR.1	Configuration Management strategy/plan (CM)	This defines the rules to maintain the uniformity between the components of the system/software versions, following carefully and recording all control changes.	Y
24 **24a**	PR. 4 PR.4	-Configuration elements - Software configuration	- elements kept under configuration control. - Source codes, documents, application development system, work product.	-Y -Y
25	RE.2	Requests for changes	This defines the proposal of a change, generally in the specification of the system/software requirements, the source can deviate from either OTO Melara or the Supplier application development system.	Y
26	RE.2	Change control documents	This follows the requests for a change until its completion (with or without actual changes), with all the related information.	Y
27	OR.1	Maintenance plan/strategy	This defines the rules, priorities, events and responsibilities for changes to the installed system/software components.	Y
28	PR.4	Customer service documentation	User manuals, diagnostics, maintenance.	Y

TABLE III – WORK PRODUCTS (WP) TO SUPPLY

WP	TYPE OF WP	SYSTEM			SOFTWARE		
		3	2	1	3	2	1
1.	System/Software Life Cycle Model	x	x	x	x	x	x
2.	Coding Standard	-	-	x	-	-	x
3.	Design Plan	x	x	x	x	x	x
4.	Minutes of the meeting (general)	-	-	reviews	-	-	reviews
5.	Analysis result (general)	-	11a	11a,14,15, risk, code		11a	11a,14, 15, risk, code
6.	Project Risk Management Strategy	-	x	x	-	x	x
7.	-Quality strategy **-7a** System/Software Quality Plan	- x	x x	x x	- x	x x	x x
8.	Review documents (general)	-	Stages*	Stages**	-	Stages*	Stages**
9.	-Re-utilisation Requirement Strategy **-9a** Re-utilisation plan	- -	- x	x x	- -	- x	X x
10.	-Acquisition Strategy **- 10a** Acquisition Plan	- -	x x	x x	- -	x x	x x
11.	-System Requirement Specification **-11a** Software Requirement Specification	x x	x x	x x	- x	- x	- x
12.	Software Design Specification	x	x	x	x	x	x
13.	Software Design	x	x	x	x	x	x
14.	-Test/Validation Strategy - **14a** Test Validation Plan	SW SW	SW SW	SW SW	SW SW	SW SW	SW SW
15.	- Unit Test Strategy -**15a** Test Plan (general)	- -	- -	x x	- -	- -	X X
16.	-Integration /Test Strategy -**16a** Integration Test Plan	- x	x x	x x	- -	SW SW	SW SW
17.	Software Validation	x	x	x	x	x	x
18.	-System Test Strategy -**18a** System Test Plan	- x	x x	x x	- -	- -	- -
19.	-No Regression Test Strategy of the performance -**19a** Non Regression Test Plan	- -	- x	x x	- -	- x	x x

QUALITY REQUIREMENTS FOR SUPPLIES TO OTO MELARA S.p.A.

WP	TYPE OF WP	SYSTEM			SOFTWARE		
		3	2	1	3	2	1
20.	-Acceptance Test Strategy -**20a** Acceptance Test Plan	x x	x x	x x	x x	x x	X x
21.	Test Procedures (general)	-	SW/SYS	SW/SYS	-	SW	SW
22.	Test Report (general)	SW/SYS	SW/SYS	SW/SYS	SW	SW	SW
23.	Strategy/Configuration Management Plan	-	x	x	-	x	x
24.	- Configuration Elements - **24a** Software Configuration	x x	x x	x x	x x	x x	x x
25.	Change Request	x	x	x	x	x	x
26.	Change Control Documents	x	x	x	x	x	x
27.	Maintenance Strategy/ Plan	x	x	x	x	x	x
28.	Customer Support Documentation	x	x	x	x	x	x
29.	Software Version Description Document (definition of the software version)	x	x	x	x	x	x

13 GENERAL REQUIREMENTS FOR WELDED JOINTS AND UNWELDED MECHANICAL/ELECTRICAL CONNECTIONS

13.1 GENERAL REQUIREMENTS FOR MECHANICAL WELDS

In general, unless otherwise specified in OTO Melara's orders or in the referenced technical documentation, welding activities are to be performed in accordance with quality requirements of standards of the family UNI EN ISO 3834 (3834-2; 3834-3;3834-4), to integrate the Supplier's Quality System already fulfilling the ISO 9001:2008 standards for welded constructions. That family of standards is structured in a way to be used as a reference for any weld construction conforming to different quality levels addressing adequately all welding processes and all related aspects capable of influencing the quality of the finished product. In particular the following elements are considered:

- project and/or contract review;
- identification of the critical characteristics;
- Identification of the risks and their management, with the implementation of the actions required to mitigate the risks;
- management of residual risks;
- subvendor;
- welding personnel;
- inspection and test personnel;
- equipment;
- welding activities;
- filler metal;
- base material storage;
- after weld heat treatments;
- inspections and tests (in accordance with appropriate UNI EN standards if not otherwise specified);
- nonconformity and corrective activity;
- calibration;
- identification and trace ability;
- documentation.

TABLE 17 CORRESPONDENCE BETWEEN THE LEVEL OF THE SUPPLY CRITICALITY AND THE LEVEL OF CERTIFICATION OF THE PROCESS OF WELDING OR MEETING THE RELATIVE REQUIREMENTS

Criticality Level	Quality Requirement of the welding process	Reference Standards	Note
1	Comprehensive quality requirements	ISO 3834-2	Certification by a recognized third party agency or, as an alternative, an adequate quality system (assessed and certified by OTO Melara through dedicated inspections and audits).
2	Comprehensive quality requirements/Standard quality requirements[132]	ISO 3834-2 /-3	Certification by a recognized third party agency or, as an alternative, an adequate quality system (assessed and certified by OTO Melara through dedicated inspections and audits).
3	Standard quality requirements/Elementary quality requirements [132]	ISO 3834-3 /-4	The Supplier must develop, document, implement a system that gives a good level of confidence that items are consistent with the requirements.

[132] According to what established by OTO MELARA welding coordinators

Harmonised standards referenced by EN ISO 3834 do not exclude validity of qualification achieved in accordance with other standards (AWS-MIL-ASME standards) provided they are compatible with the specified activity referring to the main parameters (base material, filler metal, shielding gas, etc.).

All welding activities must be supervised by personnel with the appropriate skill (EWF professional figure) whose knowledge of welding encompasses basic welding principles and procedure; his responsibility includes:

- co-ordinating activities for qualifying the procedures (WPQR) before production in accordance with the relevant section of UNI EN ISO 15614 (unless otherwise specified in the order or contract)
- compiling the WPS relevant to the envisaged typical joints
- co-ordinating qualification of the welders involved in production
- co-ordinating and/or executing the test on production welds.

Welder and process qualification (WPQR) is a document issued by a recognized or examining body to the welder and to the organization which have passed specific welding tests.

13.1.1 General requirements for control activities

Welded joints are to be free from unacceptable defects which could compromise the intended use. Acceptability levels are to conform to applicable standards. After welding the acceptability will be verified in accordance with applicable criteria unless otherwise defined in the order or drawing:

• through visual examination as per UNI EN ISO 17637 (flaws evaluation in accordance with: UNI EN ISO 5817-class “Medio-C” for steel arc welding; UNI EN ISO 10042- class “Medio-C” for aluminium and its alloys arc welded joints);

• through Non Destructive Tests as per applicable UNI EN for the type of control as provided for by the MCP (Manufacturing and Control Plan);

• dimensional examination of welding as per technical documentation and UNI EN ISO 2553.

Control activity evidences are to be recorded on suitable forms which must include qualified personnel names. Non-destructive testing personnel shall be qualified in accordance with UNI EN ISO 9712.

The outcome of inspections and tests after welding is to be recorded in the dedicated fields of MCP for the internal or external cognizant authorities.

13.2 WELDING PROCEDURE SPECIFICATION (WPS)

To give instruction to the welder the organization is to use Welding Procedure Specification (WPS) arranging them in the workshop at the workstations.

It can use specific instructions (work cycles) including all necessary elements for carrying out the welding activity correctly. These instructions are to be prepared on the basis of an already qualified WPS.

Welds will not be subject to grinding unless indicated on the drawings.

The WPS contents are to be in accordance with specific basic requirements related to the parameters used for the weld joint execution. The producer can use as a model the form reported as **attachment 5.**

The WPS (which is to undergo verification by OTO Melara Quality) will contain the following information, as applicable:

General indications

- WPS number
- referenced standard
- WPQR reference number
- date of issue
- approvals.

Specific indications:

- **Welding process**

Type of process (TIG, MIG, MAG, with electric resistance RSW, Covered Electrode) and method (manual, semiautomatic, automatic, robot welding) for the welding used.

- **Joint drawing**

Graphic representation of the welded joint with an indication of the related dimensions and methods for preparing the relative edges.

- **Joint**

Indication of the type of joint, welding material (the proprieties must be the same as the base material) or reaction plate (ceramic or different material incoherent), preparation and cleaning prior to the welding of both edges (specifying whether brushes or solvents must be used depending on the type of material treated); for aluminium alloys a stainless steel brush is recommended.

- **Base material**

Indication of the group number, the type and grade of the material treated (steel, aluminium, etc.), the thickness and outside diameter of the edges.

- **Filler material**

Indication of the normative references (UNI ISO for Europe and AWS for the USA) and the proprieties of the material, such as the classification, dimensions, trade name, manufacturer and welding device.

- **Welding position**

Indication of the positions (horizontal, vertical, L-shaped, etc), welding direction ascending or descending and any other useful indications.

- **Pre-heating**

Indication of pre and post-heating temperatures and inter-pass (where applicable).

- **GAS**

Indication of the gases used for protection, specifying the types (name and chemical symbol), mix percentage and flow rate (l/min.). Reference standard UNI EN ISO 14175.

- **Electrical features**

Indication of the current (continuous or alternating), its polarity (straight or reverse), voltage, filler metal mode of transfer.

- **Welding technique**

Indication of the mode of transfer of the welding metal (short-arc, spray-arc, pulsed-arc, dip transfer), diameter of the nozzle, wire free distance, preliminary and inter-pass cleaning, method of grooving, type of seam, torch angle and direction, and the electrode type.

The document must be stamped and approved by the welding technician.

13.3 WELDING PROCEDURE QUALIFICATION (WPQR)

As a general approach, the welding procedure qualification activities follow the rules related to the product. UNI EN ISO 15614-2 standard, for example, regarding the welding procedure qualification for aluminium and its alloys through the execution of representing test specimens. The standard describes the specific weld qualification procedure (WPS), in particular test specimens form and dimension, and execution conditions, validity limits, tests and controls are described. The same execution procedures are valid for other metals the reference standards for which are described in the family of UNI EN ISO 15614 (i.e. 15614-1).

Qualification procedures (WPQR) are described in UNI EN ISO 15614 cited in UNI EN ISO 3834 for the specific activities.Welding test specimens, relevant controls and tests to be executed are specifically described in the family of UNI EN ISO 15614 . These activities are to be executed in the presence of the examiner (EWF professional) or of the examining body (third party legally recognised i.e. Bureau Veritas, RINA, Istituto Italiano Saldatura, etc.).

In order to qualify a welding procedure it is necessary to draw a preliminary WPS (pWPS) according to the appropriate UNI EN ISO 15614 family of standards and to the applicable part of EN ISO 15609, in which validity and welding parameters are specified and all information regarding the execution of the weld test specimen are described. The pWPS makes reference to other support standards EN or ISO such as EN ISO 4063 for numerical coding of welding process, while for base materials the reference is given by CEN ISO/TR 15608. For filler metals the references to be used have been issued by Under committee SC3 “Welding consumables”. If test specimens result compliant the WPQR is obtained, it will show in details the achieved results and is to be undersigned by the examiner or the examining body. To simplify evaluation of data, a specific form for WPQR is to be used to record all weld details, validity and test results.

13.4 CONTENTS OF THE WPQR

The WPQR prepared and approved by the entitled professionals, must contain, the following information:

General

- Reference WPS (used for test specimen execution)
- Personal data of the welder: first name, surname, date and place of birth.

Specific Indications

- **Test specimen details and approval validity filed for the following parameters:**
  - welding process
  - plate, pipes, weld joint type
  - base material group, filler metal, shielding gas or flux
  - dimensions, thickness, external pipe diameter, welding position.

- **Tests**

Test are to be established and carried out by the examiner or by the examining body and will include: visual inspection, applicable NDC, fracture and bending test, additional tests (the laboratory certification shall be attached if required). Each test and/or inspection carried out and passed must be specified. Place, date of issue and expiry stamp and signature of the manufacturer is also to be reported.

13.5 SPECIAL RULES FOR BALLISTIC MATERIALS

All the welding procedures must be performed in compliance with the relevant specifications and in suitable environments (temperature and humidity values matching the requirements of the standards covering the features of the specific materials to be welded). Before starting welding operations, the above materials must be stored for at least 24 hours in the destination environment so as to allow them to reach the correct ambient temperature.
The welders must possess basic qualification suitable for the type of material and welding process and be approved by OTO Melara personnel who possess the necessary requisites and in compliance with the applicable military standards.

13.6 GENERAL RULES FOR STAINLESS STEEL WELDED JOINTS

In addition to the prescriptions related to the definition and qualification of the welding process (see also GENERAL REQUIREMENTS FOR WELDED JOINTS AND UNWELDED MECHANICAL/ELECTRICAL CONNECTIONS) the Supplier must adhere to the following indications.The resistance to corrosion of stainless steel is also dependent on condition of the surface which enters in contact with the corrosion environment. There are recommended procedures and treatments for polishing the stainless steel surfaces both for flat products (plates or bands) which may have been laminated, hot forged or subject to heat treatments or finished items which have been machined or welded, etc. In both cases it is necessary to polish the surface from slag or dross which prevent it from coming into contact with atmospheric oxygen and then forming the passive layer. This is to prevent localised corrosion once the item is put in the environment. The Supplier must therefore observe the prescriptions below:

a. Pickling

The treatment is intended to remove slag or dross that form as a consequence of high temperature heating in the presence of oxygen as, for example hot rolling, forging, heat treatment, welding, etc..

The techniques can be mechanical or chemical.

b. Passivation

This treatment, also known as “decontamination”, is used to restore the natural passivity of the stainless steel surface eliminating traces of different metal such as carbon steel and preventing the surface to show stains even if in not severe environment. In fact, the deposit on the surface of stainless steel anode metals such as carbon steel, can create the premises, even in environments which are not particularly corrosive, for a stainless steel staining to begin. The use of tools that have machined carbon steels such as grinders or storage in contact with carbon steel can contaminate the stainless steel surface. To prevent contamination it is necessary to decontaminate the parts; this can be done chemically on the whole surface (immersion) or locally with special paste available.

13.7 RESISTANCE SPOT WELDING (STITCH WELDING)

Resistance Spot Welding (RSW) is a process by means of which only the base material is molten through direct current passage.
The procedure are defined, described and documented as per GENERAL REQUIREMENTS FOR WELDED JOINTS AND UNWELDED MECHANICAL/ELECTRICAL CONNECTIONS with the relevant content.
The Supplier's welder has the task of coordinating and providing support in preparing the specimens for assessing the processes and the welding machine, carrying out the tests on the welded joints and coordinating the welders' activities.
The Supplier should take great care with stainless steel welds to prevent the risk of contamination, in particular the following must be ensured:

- the stainless steel surfaces must be cleaned thoroughly before welding, using special brushes or solvents or pickling agents.
- the electrodes used must be new and used only for this material and constantly controlled for their wear condition.
- the workplace must be free from contaminating agents.

The Supplier must:

- carry out in-process controls and record the results on the daily chart of at least two specimen at each production start to verify the core diameter request by drawing)
- check the status of calibration of the test equipment.

The process used for this type of welding is assessed after executing the various welded specimens for each type of shim coupling. All the results obtained will be documented for comparison purposes.

The reference standards are UNI EN ISO 15609-5 and UNI EN ISO 15614-12 if not otherwise specified in the order or contract.

Each test welded specimen will undergo:

- Inspections and tests including:
  - Visual inspections to check that there is no surface oxidation of the spot, molten marks or marked engravings
  - Macro graphic test to check penetration (percentage of the molten zone) and surface marks.

- Tests including:
  - Tensile strength (Shear Test) to check the average and maximum ultimate tensile strength. Execution of at least 5 specimen (if not otherwise specified). The results obtained must be checked to ascertain that they match the reference tables.
  - Cross Tension Test with execution of at least 5 specimen (if not otherwise specified) to verify:
    - spot dimension after peel test, with reference to the core size
    - the average ultimate tensile strength.

The values obtained must be compared with the reference values to check whether they fall within the acceptability range.
At each start of production, carry out at least two specimen for Peel Test to verify the core diameter (envisaged in the drawing) in relation to qualification data.

Moreover these tests must be performed whenever:

- the electrodes are replaced
- the welding machine set up conditions have changed
- any element is replaced.

13.8 GENERAL BRAZE-WELDING REQUIREMENTS

Braze-welding must be developed in such a way as to make joints from materials of the same or of a different nature that are resistant to corrosion and vibration.

The Supplier must guarantee the use of qualified processes and operators.

In particular, the following documents must be produced or delivered to OTO Melara prior to execution of the related activities:

- BPS (Brazing Procedure Specification)
- PQR (Procedure Qualification Record)/BPQR (Brazing Performance Qualification Record).

These documents must be developed in accordance with ANSI /AWS B 2.2 – 91, UNI EN 13134 standards. In carrying out the process, the Supplier must take special care over the following activities:

- cutting and adjustment
- surface cleaning
- application of the welding paste
- support and alignment of the assembly
- heating and fluxing of the welding metal
- Braze-welding execution
- Cleaning and removal of any welding paste residue.

Defects are to be eliminated in accordance with UNI EN ISO 18279.

13.9 REQUIREMENTS FOR MECHANICAL UNWELDED CONNECTIONS (RIVETS, ETC.)

All the indications specified in the drawing must be complied with. Before starting production activities, the list of personnel authorized to perform the process must be provided, with details of the relevant duties and functions (production and control activities). All the equipment used must undergo periodic checks, of which the Supplier must provide suitable evidence.

13.10 REQUIREMENTS FOR WELDING ELECTRONIC COMPONENTS (SOFT SOLDERING)

For the purpose of obtaining the required authorization, before starting series production, the Supplier must provide OTO Melara Quality Assurance Department with the documentation required to carry out the manual, surface-mount or wave welding process. This documentation must include at least the following information:

a) type of alloy and flux used;

b) methods and times for cleaning the welds;

c) procedures for cleaning/painting the printed circuit boards, where applicable;

d) type of solvent and paint, when applicable (for the operations of the previous point).

All this must comply with the provisions set out under the manufacturing procedures **OTO PF-030-01, PF-030-02, PF-050-nn, PF-020-01** for the assembly of components. Moreover, when welding components that are sensitive to electrostatic discharge, the Supplier must provide locations suitable for this type of activity that are in compliance with the provisions set out in OTO Melara procedure **PF-040-22**.

13.11 REQUIREMENTS FOR UNWELDED ELECTRICAL CONNECTIONS

For the purpose of obtaining the required authorization, before starting series production, the Supplier is to provide OTO Melara Quality Assurance Department with the documentation required to carry out the set welding process; this document must be drawn up in compliance with OTO Melara manufacturing procedures **OTO PF-040-nn** and **OTO PF-070-nn**.

14 AMMUNITION

14.1 AMMUNITION AND/OR PARTS THEREOF MADE TO OTO MELARA SPECIFICATIONS

The aim of this section is to define the quality requirements to be complied with by the Suppliers supplying OTO Melara with ammunition and/or parts thereof made to OTO Melara specifications. If the supply contains parts designed by the Supplier, the PROJECT REQUIREMENTS (see TABLE 9, section PROVISIONS TO ADOPT FOR DEVELOPING THE DESIGN IN COMPLIANCE WITH OTO MELARA REQUIREMENTS and SOFTWARE REQUIREMENTS (see TABLE 10, section SOFTWARE) apply. In particular, the process validation and control requirements, including quality records, are defined. Refer to section APPLICABILITY above for instructions on how to handle the supply of ammunition.

14.1.1 Quality System Organization

For the kind of product and relevant activities the Supplier Quality System is to comply with **AQAP-2110 or ISO 9001:2008 (if the supply contains parts designed by the Supplier) or AQAP-2120 or ISO 9001:2008 (if the supply does not contain parts designed by the Supplier).**

In addition, in the event that it is required to supply particular software application packages to be integrated for example in self guiding systems or piloting in flight of "smart ammunitions" designed by OTO Melara, compliance with AQAP-2210 is required.

14.1.2 Complex/critical products

Within the framework of the supply of ammunition to OTO Melara the following products are defined as complex/critical:

a. shell blank
b. empty shell
c. charged shell
d. warhead casing
e. charged warhead
f. case
g. igniter
h. propellant
i. fuse or initiators
j. electronics and homing section
k. luminous tracers
l. flash charge
m. sabot
n. explosive charge;
o. complete round
p. transport box.

14.1.3 Manufacturing and control process requirements

14.1.3.1 Manufacturing and control plan

The provisions indicated in the section MANUFACTURING AND CONTROL PLAN (MCP) apply, with the following addition:

a) for each type of supply, when first implementing the relevant manufacturing/control plan, OTO Melara personnel will perform a process audit.

b) for each supply, before starting the activities, OTO Melara is to receive (possibly together with the Quality Plan) the manufacturing and control time schedule, the chart listing the parts making up the supply, the Product Baseline and all the elements required to ensure traceability (e.g. the internal job number/sales order number).

All the above must **fully comply with** the manufacturing requirements included in the technical documentations (drawings, special process specifications, ammunition specifications) supplied by OTO Melara. The manufacturing documents will also ensure **traceability** of the ammunition components.

Note: the test instructions/procedures are to match those specified in the technical documentation supplied by OTO Melara (ammunition specifications, drawings and part lists, special process specifications). Any acceptance procedures issued by the Supplier are to be presented to OTO Melara for approval.

Unless specified otherwise on the order, the **records** of intermediate and final tests/controls are to be filed and kept **for at least 10 years** from the date of completion of the supply,
This documentation must allow full data **traceability** of the controls carried out as against those carried out by Subvendors up to the final acceptance test.

14.1.3.2 Test attendance

The Supplier **must** send an invitation to attend the test of the object covered by the contract to OTO Melara with at least **10 days notice (working days)**. It will be up to OTO Melara Quality Assurance Department to request, during the supply, participation in any intermediate/final tests of the components.During these tests, OTO Melara Quality Assurance reserves the right to **choose** which components/ammunition are to be tested as **samples**.

In the case of a negative result, nonconformities will be recorded and the product must be resubmitted OTO Melara following documented analysis of the nonconformity and the introduction of corrective actions which are to shared with OTO Melara Quality Assurance and Development departments.

14.1.3.3 Final tests

OTO Melara Quality Assurance must attend the final tests when firing a complete cartridge.

A conformity audit must also be performed to check compliance with the test requirements specified in the documents supplied by the Supplier and any Subvendors.

In the case of a negative result, nonconformities will be recorded and the product must be resubmitted to OTO Melara following documented analysis of the nonconformity and the introduction of adequate corrective actions.

14.1.3.4 Product identification

The products must be identified in compliance with the provisions set out in the technical documentation supplied by OTO Melara. Conformity of identification is to be checked by the Supplier's Quality function who will record the results of this check together with all the test results.

14.1.3.5 Product handling

The products must be handled in compliance with the contract requirements and the applicable provisions of law in order to protect the product and the personnel involved, from when the material enters the factory and throughout all the manufacturing/control stages up until final delivery.

14.1.3.6 Packing and identification (box marking)

The products must be packed in compliance with the requirements set out in the technical documentation supplied by OTO Melara (OTO Melara Specifications, Drawings, and Purchase Order) and in compliance with the provisions of law. Compliance of the Packing and identification must be verified by the Supplier's Quality function who will record the results of this check together with all the test results. Unless already included in the Quality Plan or the applicable documentation, the Supplier must submit the packing box identification and marking criteria for prior approval by OTO Melara.

14.1.3.7 Despatch to Final Customer

The material cannot be despatched before successful completion of the check of the packaging, its marking and identification and the accompanying documents. This compliance is to be verified by the Supplier's Quality function that must record the despatch together with all the test results.

The Supplier can despatch the material in compliance with the order requirements, only after having received **formal authorization** from OTO Melara.

The Supplier is responsible for ensuring the **couriers** comply with all the rules and regulations regarding ammunition as prescribed by the applicable law or the technical documentation supplied by OTO Melara Quality Assurance.

14.1.3.8 Test documentation and certification of the supply

1) depending on the type of product, the Supplier must make the following documents available to OTO Melara Quality Assurance and **supply them on request:**:

a) the workshop test recording forms for lots and/or serial components (including those supplied by Subvendors)

b) the firing test recording forms for lots and/or serial components (e.g. propellant, igniters, cartridge cases, explosive, discharged projectile, charged projectile)

c) the fuse/SAU factory test recording forms

d) the fuse/SAU firing test recording forms

e) the complete cartridge factory test recording forms

f) the complete cartridge firing test recording forms.

This documentation must be filed together with that covering the supply and kept by the Supplier according to the provisions set out in section **14.1.3.1.**

2) At the end of the acceptance test of the object covered by the order, the following documents must be sent to OTO Melara:

a) Certificate of Conformity of the supply, signed by the Quality function or the Head of the company (drawn up in accordance with the form referred to in Annexe B of AQAP-2070)

b) copy of the certificates of conformity of any lot batched components

c) copy of the required test recording forms.

d) identification codes of the products/materials included in the supply containing dangerous substances under the REACH Regulation and the related safety data sheets.

These test and conformity certificates, together with the Quality Plan and the Manufacturing/Control Plan are to be filed and kept by OTO Melara Quality Assurance department.

14.1.4 Simple products

Within the field of ammunition, simple products indicates all those not included in the list of complex/critical products (e.g. spacers or cardboard parts, loose metal parts).

For the simple products, the Supplier will comply not only with all the points specified above, see section APPLICABILITY but also with those below.

14.1.4.1 Quality System Organization

For the type of activity required by the product to be supplied, the Supplier's Quality System is to comply at least with the **AQAP-2131 or ISO 9001:2008** standards.

14.1.4.2 Production and testing

The activities required to fulfil the requirements specified in the order from OTO Melara are to be planned over a manufacturing/control cycle. The Supplier will provide a list of authorized testers by qualification and perform the tests specified according to the procedures supplied by OTO Melara or processed by the Supplier, according to the technical documentation specified on the order. Objective evidence of these activities must be presented.

Unless specified otherwise on the order, the inward, intermediate and final test/control records are to be filed and kept for at least **10 years** from when the supply is completed.

14.1.4.3 Documentation for the certification of the supply

The following documentation must accompany the material when delivered:

- Original Certificate of Conformity of the supply

- Any other certification specified on the order,

- identification codes of the products/materials included in the supply containing dangerous substances under the REACH Regulation and the corresponding safety data sheets

If the certification specified for the various cases is not attached to the shipping list, the supply will not be accepted and will be returned to the Supplier at its own expense.

14.1.4.4 Despatch

The material can be despatched only after successful completion of the checks on the packing, identification and accompanying documentation. This conformity must be verified by the Supplier who must record it together with all the other tests.

14.2 STANDARD CATALOGUE AMMUNITION

In this case the Supplier must prove, under its responsibility, the validation of the Supplied Product.

Refer to section APPLICABILITY above for instructions on how to handle the supply of standard ammunition.

There are two types of standard catalogue ammunition:

a. Ammunition destined to OTO Melara Customers as a supplement to its own supplies
b. Ammunition destined for OTO Melara tests.

14.2.1 Quality system

For the envisaged activities the Supplier Quality System is to comply with **AQAP-2110/2210 and ISO 9001:2008**.

14.2.2 Ammunition destined to OTO MELARA's Customers

In this case OTO Melara must monitor the quality of the supplied products. The requirements specified for the ammunition and/or parts thereof produced according to the technical documentation supplied by OTO MELARA apply, except for the fact that all the activities are performed under the Supplier's primary responsibility, and OTO Melara itself monitors the manufacturing/control process.

14.2.2.1 Manufacturing and control plan

The provisions indicated in section MANUFACTURING AND CONTROL PLAN (MCP) apply in addition to indications in the previous section 14.1.3.1.a/.b.

14.2.2.2 Test attendance

The Supplier **must** send an invitation to attend the test of the object covered by the contract to OTO Melara with at least **10 days** notice (working days). It will be up to OTO MELARA Quality to request, during the supply, participation in any intermediate/final tests of the components.

During these tests, OTO MELARA Quality reserves the faculty to **choose** what components/ammunition are to be tested as **samples**.

In the case of a negative result, nonconformities will be recorded and the product must be resubmitted OTO Melara following documented analysis of the nonconformity and the introduction of corrective actions which are to shared with OTO Melara Quality Assurance and Development departments.

14.2.2.3 Final tests

OTO Melara Quality must attend the final tests when firing a complete cartridge.

A conformity audit must also be performed to check compliance with the test requirements specified in the documents supplied by the Supplier and any Subvendors.

In the case of a negative result, nonconformities will be recorded and the product must be resubmitted OTO Melara following documented analysis of the nonconformity and the introduction of corrective actions which are to shared with OTO Melara Quality Assurance and Development departments

14.2.2.4 Handling

The products must be handled in compliance with the contract requirements and the applicable provisions of law in order to protect the product and the personnel involved, from when the material enters the factory throughout all the manufacturing/control stages up until final delivery.

14.2.2.5 Packing and identification (box marking)

The products must be packed in compliance with the requirements set out in the technical documentation and the provisions of law. Compliance of Packing and identification must be verified by the Supplier's Quality function who will record the results of this check together with all the test results.

14.2.2.6 Despatch to Final Customer

The material must be despatched after successful completion of the checks on the packaging marking and identification and the accompanying documents . This compliance must be verified by the Supplier's Quality function who will record the despatch together with all the test results.

The Supplier must despatch the material in compliance with the order requirements, after having received **formal authorization** from OTO Melara.

The Supplier is responsible for ensuring the **couriers** comply with all the rules and regulations regarding ammunition as prescribed by the applicable law or the technical documentation supplied by OTO Melara.

14.2.2.7 Test documentation and certification of the supply

At the end of the acceptance test of the object covered by the order, the following documents must be sent to OTO Melara:

a) Certificate of Conformity of the supply, signed by the Quality function or the Head of the company (drawn up in accordance with the form referred to in Annexe B of AQAP-2070)

b) copy of the certificates of conformity of any lot batched components

c) copy of the required test recording forms.

d) identification codes of the products/materials included in the supply containing dangerous substances under the REACH Regulation and the related safety data sheets.

14.2.3 Ammunition destined to OTO MELARA tests

In this case the Supplier must ensure under its full responsibility the compliance of the supply. OTO MELARA reserves the right to approve the final test procedure and attend the final tests.

14.2.3.1 Final tests

The tests must be performed in accordance with the procedures approved by OTO Melara by defining the sampling plan.

OTO Melara Quality Assurance must attend the final tests when firing a complete round.

A conformity audit will also be performed to check compliance with the test requirements specified in the documents generated by the Supplier and any Sub Suppliers.

14.2.3.2 Test attendance

The Supplier **must** send an invitation to attend the test of the object covered by the contract to OTO Melara with at least **10 days** notice (working days). During these tests, OTO Melara Quality Assurance reserves the right to **choose** the **samples** to test.

In the case of a negative result, nonconformities will be recorded and the product must be resubmitted OTO Melara following documented analysis of the nonconformity and the introduction of corrective actions which are to shared with OTO Melara Quality Assurance and Development departments.

14.2.3.3 Product handling

The products must be handled in compliance with the contract requirements and the applicable provisions of law in order to protect the product and the personnel involved, from when the material enters the factory throughout all the manufacturing/control stages up until final delivery.

14.2.3.4 Packing and identification (box marking)

The products must be packed in compliance with the requirements set out in the technical documentation and the provisions of law. Compliance of Packing and identification must be verified by the Supplier's Quality function who will record the results of this check together with all the test results.

14.2.3.5 Despatch to the site specified by OTO MELARA

The material must be despatched after successful completion of the checks on the packaging marking and identification and the accompanying documents has been completed successfully. This compliance is to be verified by the Supplier's Quality function who will record the despatch together with all the test results.

The Supplier will despatch the material in compliance with the order requirements, after having received **formal authorization** from OTO Melara.

The Supplier is responsible for ensuring the **couriers** comply with all the rules and regulations regarding ammunition as prescribed by the applicable law or the technical documentation.

14.2.3.6 Test documentation and certification of the supply

At the end of the acceptance test of the object covered by the order, the following documents must be sent to OTO MELARA:

a) Certificate of Conformity of the supply, signed by the Quality function or the Head of the company (drawn up in accordance with the form referred to in Annexe B of AQAP-2070)
b) copy of the certificates of conformity of any lot batched components
c) identification codes of the products/materials included in the supply containing dangerous substances under the REACH Regulation and the related safety data sheets.

15 USER MANUALS AND SPARE PARTS CATALOGUES

Refer to section APPLICABILITY above for instructions on how to handle the supply of user manuals and spare parts catalogues.
This chapter refers to products designed and developed by Suppliers on the basis of OTO Melara requirements.

N.B.: In case of catalogue products developed by Suppliers the required documentation is the standard one unless otherwise agreed in the order.

15.1 GENERAL REQUIREMENTS

The Suppliers of plant/systems and equipment will deliver OTO Melara Logistic Engineering Business Line the structured product documentation for verification and approval including:

a. a general description of the system/plant covered by the supply
b. link with the reference configuration
c. link with maintenance plan
d. functional description of the system/plant within the execution of the job order
e. preventive and scheduled maintenance
f. corrective maintenance
g. setting and adjustments
h. installation
i. trouble shooting
j. overhauling procedure
k. Spare parts catalogue containing the figures, assemblies/subassemblies list and relevant parts (exploded isometric drawings).

15.2 DOCUMENT DEVELOPMENT METHOD

All the above documents must be supplied with the relevant electronic medium and in details:
for manuals

- text — MS Word®
- tables — MS Excel®, Access® (IPC tables)
- image, figures — vectorial (or as an alternative raster)

for spare part catalogues

- development data base — MS Access®
- image, figures — vectorial (or as an alternative raster)

OTO Melara Logistics Support Engineering will provide the information on how to develop the documentation, its contents, layout and editing in the job order specifications.

15.3 PENALTIES

Failure to provide these documents, any delays in relation to the set times or incompleteness will involve penalties which will be ruled by specific items under the Purchase orders and/or Contracts.

16 ACTIVITIES DEVELOPED BY SUPPLIERS AT OTO MELARA

Refer to section APPLICABILITY for instructions on how to handle these activities.

16.1 GENERAL

The Suppliers required to carry out activities at OTO Melara production lines must strictly comply with the requirements prescribed by:

a. the Purchase Orders/Contracts
b. the applicable law requirements
c. the applicable documentation
d. PSA0001 procedure (Safety procedure for contractors).
e. from the Single Document on the Assessment of Risk from Interference (DUVRI), which must be obtained from OTO Melara, if not already received as an annex to the contract.

16.2 SUPPLIER'S ORGANIZATION AND PERSONNEL

The Supplier must guarantee the continuous presence in the department of a contact person in possession of the necessary qualification and technical skill to create the interface with the person responsible for OTO Melara. The name of this person is to be formally notified to OTO Melara Procurement before starting the activities, integrated by his/her up-to-date Curriculum Vitae. The Supplier must guarantee that the work is carried out by trained and qualified personnel at the OTO Melara facility.
In the field of aeronautical products, the suitability of personnel should be also attested by the Supplier Quality, which, upon request, must provide evidence that the personnel members are trained on the procedures to be applied and are aware of them. Such personnel must also be evaluated in advance by the Production and OTO Melara Quality Assurance department.

16.3 DEVELOPMENT OF THE ASSIGNED ACTIVITIES

The Supplier undertakes to develop the activities assigned following the established work and control instructions, using equipment that is suitable in terms of class, type and maintenance status. In particular, it cannot use equipment not conforming to the applicable safety law directives. The activities are to be performed according to the set schedule, and the Supplier must promptly inform the contact person for OTO Melara of any difficulty or impediment which may affect compliance. When required, Supplier personnel are to complete the progress chart for the work by means of stamps which refer to the operators.

16.4 OTO MELARA CONTROL ON THE SUPPLY

OTO Melara must inform the Supplier with due notice of the activities it wishes to attend. The Supplier must call OTO Melara Quality Assurance for a meeting at least one day in advance.
It should be noted that the product must be available for performing the set control activities at the time of notification to OTO Melara Quality Assurance otherwise OTO Melara will charge the Supplier any costs due to inactivity of its personnel due to unavailability of the product. The Supplier must present the product to the test by OTO Melara after having developed the verifications required.
If any nonconformity is found, OTO MELARA personnel is required to issue the relevant "Nonconformity Report for subcontracted supplies" and the Supplier must take the necessary steps for its solution.
OTO Melara and its Customers or Representatives can perform Audits on the Supplier's Quality System and the execution of the activities. The Supplier must take the necessary corrective actions within the set times and according to set methods.

17 ACTIVITIES DEVELOPED BY SUPPLIERS AT COMMISSIONING AND SERVICE CENTRES

Refer to section APPLICABILITY above for instructions on how to handle these activities.

17.1 GENERAL

The section refers to Suppliers who are required to execute the following activities at service centres:

- commissioning of mounts, launchers or apparatuses
- status verification
- execution of corrective maintenance
- introduction to the agreed modifications or shortfalls
- compilation of failure reports and work sheets, and on-site activity management
- management of nonconformities and direct contact with OTO Melara representatives for their solution
- reporting of significant malfunctions and problems.

The Supplier draws up and makes available to OTO Melara the service Quality Plan, which is divided into the following sections:

- organization of on-site structure, with the name of the personnel employed
- method of execution of the activities assigned
- spare parts warehousing method
- relations with OTO MELARA and the end Customer
- operating instruments used.

If activities are coordinated by OTO Melara personnel present at the yard or job sites, the Quality Plan is not requested.

17.2 DOCUMENTS SUPPLIED BY OTO MELARA

The Supplier operating at the job sites normally receives the following documents and is responsible for using them correctly and maintaining them up to date:

- test plan and test procedures for commissioning
- communication of any modifications made
- functional drawings and charts required to introduce modifications
- use and maintenance handbooks and spare parts catalogues
- missing parts list
- spare parts list
- job order development schedule for Supplier's activities
- forms on which to record the activities carried out
- Single Document on the Assessment of Risk from Interference (DUVRI), as applicable.

The Supplier is responsible for promptly reporting any inconsistencies or incompleteness in the above documents.

17.3 DOCUMENTS DRAWN UP OR PRODUCED BY THE SUPPLIER

In the case of activities for which the Supplier has complete responsibility, it is to follow the indications below.

The Quality Plan is the document used by the Supplier to officially state compliance with the provisions specified in section 16.1. The plan must be presented to OTO Melara **within 60 calendar days** of the date on which the Supplier has received the assignment letter or

purchase order. The Plan must be submitted by the Supplier for a review should any of the following occur:

- modifications to the dedicated structure
- organizational changes;
- remarks by OTO Melara following assessment.

For commissioning, the Supplier must make available, **30 days prior to the start of the tests**, a general execution programme in the form of a GANTT chart, showing:

- the test sequence
- the number and type of the personnel involved.

In the event of delay in developing these activities attributable to the Supplier, it must present in the program revision the steps it intends to take to solve the problem. Any documents consigned by the Supplier to OTO Melara unofficially and not explicitly referred to in the contract documents, relating to the types of documents that the Supplier is responsible for issuing, must be considered as application examples and the Supplier may not use them for developing its own activities or referring to them in its documents.

17.4 ORGANIZATION OF THE SUPPLIER'S PERSONNEL AND RESOURCES

In the case of activities for which the Supplier has complete responsibility, it is to set up a structure including the following:

- a person in charge
- Spare parts management operator
- skilled servicing engineers (maintainers)

The person in charge will have the following tasks:

- co-ordinating the personnel and planning their work
- handling relations with the Customer's personnel present on site
- handling relations with OTO Melara personnel
- handling relations with Suppliers for resolving nonconformities, delays in delivery, etc.

The person in charge must provide OTO Melara in real time, and in the manner established in the Quality Plan, documents detailing the problems occurring with the equipment during operation, regardless of whether or not they are reported by OTO Melara's Client and the corrective maintenance activity carried out. The person in charge must also answer requests for details from OTO Melara personnel or anyone working for it. The name of the person and an up-to-date curriculum must be specified in the Quality Plan. The Supplier must guarantee the use of properly trained and, if necessary, qualified personnel that are able to:

- interpret the technical documentation correctly
- carry out their tasks autonomously
- develop the assigned self-control activities
- highlight any nonconformities in the components received or when performing their tasks
- follow the safety rules in order to prevent risks to him/herself and anyone else present on site.

The Supplier agrees to develop the activities in accordance with legal requirements and with the operating and control instructions and the use and maintenance handbooks, and using equipment that is suitable in terms of class, type and maintenance status.
In particular, the Supplier must not use equipment that does not comply with the current safety directives. The measuring equipment must be calibrated periodically (according to ISO 9001:2008 and ISO 10012), and show evidence of its validity status; furthermore the Supplier must present documentation showing the measurements made.

17.5 SUBCONTRACTED MATERIALS AND SPARE PARTS

Materials subcontracted by OTO Melara (for modification or integration) or identified as spare parts must be preserved in such a way as to maintain their identification (Withdrawal order) and make sure they do not get damaged. The Supplier must report immediately:

- quantity shortfalls compared to the accompanying documents, and damage to the materials or components received
- any nonconformities found during installation or testing.

17.6 COMMISSIONING

Commissioning activities are carried out by OTO Melara personnel who is responsible for that; in case the Supplier carries out these activities autonomously it is to complete the documentation provided by OTO Melara.

Commissioning takes place on completion of installation. It involves a series of tests, inspections and controls and ends with provisional delivery of the product to the Customer, provided that the following tests have been passed:

- static tests
- dynamic tests.

17.7 WARRANTY SERVICE

Service activities are normally under the responsibility of OTO Melara personnel; in case the Supplier carries out these activities autonomously it is to complete the documentation provided by OTO Melara.

The service activities under warranty which the Supplier must perform between delivery of the product and expiry of the warranty for each product, include:

- Interventions of repair after failures (corrective maintenance)
- the introduction of modifications and/or variants
- the reporting of major or recurring problems
- the management of faulty products.

The Supplier must also provide the necessary support in the search for solutions and in discussions with the Customer and/or Suppliers in order to make a correct determination of the party responsible for the failure.

17.8 MANAGEMENT OF NONCONFORMITIES AND FAILURES

Management of nonconforming or faulty products is normally carried out by OTO Melara personnel who are responsible for that; in case the Supplier carries out these activities autonomously it is to complete the documentation provided by OTO Melara.

It is the Supplier's responsibility to:

- identify the non-conforming product or the failure by means of an identification tag, before it is placed in a dedicated area in the warehouse, which is physically separate from the area set aside for spare parts
- compile a product failure report on the form supplied by OTO Melara, providing the information required for a full and correct understanding of the situation found
- handle contacts with the OTO Melara units and/or the Suppliers' for the return of the product taking care that this is accompanied by the nonconformity report
- send reminders to the OTO Melara unit and/or the Supplier, if necessary
- check the state of the repaired and/or despatched product and compilation of the failure report

- send the nonconformity documentation to the relevant department (Logistic Business Line, La Spezia, BMB production unit).

17.9 INTRODUCTION OF MODIFICATIONS AND FIELD INTERVENTIONS

Modification or variant introduction activity is normally carried out by OTO Melara personnel who are responsible for that; in case the Supplier carries out these activities autonomously it is to complete the documentation provided by OTO Melara.

The Supplier is responsible for introducing the modifications and/or variants required by OTO Melara. This activity must be:

- developed in accordance with the documentation received (Change Orders, Requests for Technical Modification etc.) received by OTO Melara, based on the attached or quoted drawings
- performed using the materials received from OTO Melara
- checked after introduction to verify its operation
- reported to OTO Melara on the summary sheet signed by the person in charge of the activity (and countersigned by the Customer's representative, if required).

The Supplier must report any major failure/malfunction (generally involving safety or continuity of operation) to OTO Melara by means of a document called "Repair/Recovery Form", in which he/she must describe the event, when it occurred, the presumed cause and all the information considered necessary to define the situation (including photographs and sketches). Corrective maintenance actions are performed to ensure that operation can be resumed safely and permanently. The Supplier must ensure prompt effective intervention and correct recording thereof in terms of:

- the type of failure/malfunction
- any replaced parts
- the attribution of expenses for RAMS purposes.

The Supplier must guarantee correct management of spare parts in terms of:

- compliance with the established stock levels
- correct storage

In particular, the Supplier must guarantee:

- correct and permanent identification of the spare parts
- the correspondence of spare parts to the certifications produced by the OTO Melara Supplier, and F.I.F.O.[133] inventory management, where required
- ambient and physical conditions suitable for the storage of spare parts
- provision of evidence of the control status
- the availability of safety data charts, where applicable
- correct storage of technical documents and certifications sent by the OTO Melara Supplier and accompanying the spare parts.

The Supplier must separate the spare parts from non-conforming or faulty products to prevent the risk of wrong pick-ups from the warehouse or shipping. The Supplier must draw up and keep up to date a spare parts list showing the amount of spares in stock for each type of product. The Supplier is responsible for send reminders to OTO Melara and its Subvendor when the level of stocks reaches the minimum.

[133] First In First Out

17.10 CONTROL EFFECTED BY OTO MELARA ON THE ACTIVITIES

OTO Melara and its Customers or representatives may carry out audits on the effectiveness and efficiency of the Supplier's Quality System. The Supplier must take, when and how specified, all required corrective actions.

17.11 OPERATING INSTRUMENTS

The operating instruments are documents whose compilation and management determine the progress of commissioning activities and the warranty service. These documents must be presented to OTO Melara as they:

- prove the Supplier's operability, the state of progress of the activities against the time schedule
- allow collecting data for statistical purposes
- document the problems that may arise;
- supply the elements for correct attribution of failures.

The types of documents that the Supplier must use include:

- a form for recording and monitoring the requests for intervention (attached to procedure OTO Melara PMQ18)
- list of work to be performed;
- sheets of work performed;
- test reports
- situation of changes introduced or to be introduced;
- the repair form (attached to OTO Melara document OTO-SR-002)
- on-site modification report (attachment B to OTO Melara document OTO-AT-001)
- intervention report for recording failures and interventions made with measurement of data for availability and reliability (attached to OTO Melara procedure PMQ18).

18 ATTACHMENTS

18.1 ATTACHMENT 1: REGISTRATION FORM OF VERIFICATIONS CARRIED OUT AT THE PREMISES OF THE SUPPLIER (example)

OTO Melara
A Finmeccanica Company

MODULO REGISTRAZIONE VERIFICHE C/O FORNITORI

Attività svolta da:

NOMINATIVO	MATRICOLA	CENTRO	DATA/E USCITA/E

CODICE FORNITORE	DITTA	LOCALITA'	PROVINCIA

TOTALE PERSONALE OTO MELARA SpA IMPEGNATO NELLA VERIFICA _____

FAI ☐; COLLAUDO INTERMEDIO ☐; COLLAUDO FINALE ☐;
AUDIT DI SISTEMA ☐; AUDIT DI PRODOTTO ☐; ESITO % ☐; TOTALE ORE ☐.

ATTIVITÀ PIANIFICATA (ES. SU PFC, PROGRAMMA VERIFICHE ISPETTIVE) ☐;
ATTIVITÀ NON PROGRAMMATA ☐ necessaria per la seguente causale_____;

- Barrare la tipologia della verifica
- ESITO %: Indicare la percentuale di CONFORMITÀ riscontrata nel corso delle attività (Es.: 0, 10, 20,.....,100 %)
- ORE: Indicare il numero di ore totali impiegate per la verifica

DA COMPILARE A SEGUITO DELLE ATTIVITÀ DI COLLAUDO:

Numero Ordine	Posizione Ordine	Numero Disegno	Costruzione	Quantità presentata	Quantità Accettata	Quantità Non Conforme

Motivo della/e Non Conformità:

Note:

Firma del Fornitore	
Firma del Personale OTO Melara SpA	
Firma dell'eventuale Rappresentante del Cliente	

DISTRIBUZIONE:
- Qualità/Sistema Qualità (sempre, allegandolo al foglio di viaggio)
- Nel caso di collaudi: ☐ Fornitore (da allegare alla distinta di trasporto unitamente agli altri documenti); ☐Collaudo Ricezione competente; ☐ Gestione Materiali; ☐ Acquisti (nel caso di collaudo con esito negativo).

Modulo Cod.: AQA0019-02 – Archivio/Identificazione File: Rete Aziendale/Proc_Uff/AQA0019-02 (MSW 2010)

18.2 ATTACHMENT 2: FORM FOR MANAGING JOB ORDER DOCUMENTATION AND CHANGE INTRODUCTION REGISTRATION (example)

	GESTIONE DELLA DOCUMENTAZIONE DI COMMESSA E REGISTRAZIONE DELL'INTRODUZIONE MODIFICHE	Nr. DOC.: REV.: Pag.....di..... DATA:
PRODOTTO:	Nr. ORDINE OTO MELARA.:	COMMESSA INTERNA:

NUMERO DOCUMENTO	TITOLO e/o ARGOMENTO	REV.	Ricevuto da OTO Melara	MATRICE DI DISTRIBUZIONE DOCUMENTAZIONE						Punto Introduz. Modifica Segnalato da OTO Melara	Regi-strazione introdu-zione Modifica
				Interna					Esterna		
			Data	Data	Ufficio Tecnico	Contr. Qualità	Produ-zione	Acqu-sti	Nome sub-fornitore		

APPROVAZIONE	GESTORE DELLA DOCUMENTAZIONE CONTRATTUALE

18.3 ATTACHMENT 3: MANUFACTURING AND CONTROL FORM

18.3.1 Explanatory notes

Reference on the form	Explanation
1	Name of the firm that issues the MCP
2	OTO MELARA order to which the MCP refers
3	MCP number
4	Revision index and relevant date
5	Internal job order assigned to the activities
6	Page and total page numbers of MCP
7	Supplied product description
8	Drawing and revision index numbers
9	Quantity in case of non-serialized products or S/N in case of serialized products
10	Progressive number of manufacturing and control stage
11	Manufacturing and Control stage description; filled also with sub supplied activities indicating sub Supplier name.
12	Reference Documentation Code (including revision index) to carry out the planned activities at the stage (i.e.: manufacturing cycle code, applicable WPS number, applicable test procedure code)
13	Record the type of control to be executed (i.e.: functional, visual, dimensional, etc.) and the percentage of item to check
14	Declaration of completion of the stage (signature of the responsible personnel)
15	Definition of intervention points of QA of the Supplier, of the Customer (OTO Melara), of the final Customer to be associated to phases (stages) classification
16	Phase Classification: **H:** hold point **W:** witness point **R:** recoding/report
17	Control phase execution date
18	Inspector signature
19	Number of the document issued for the specific phase (i.e.: test report, certificate of conformity, etc.)
20	Record possible notes and reference of nonconformity report or deviation
21	Approval signatures (at list of the Supplier QA responsible)

18.3.2 Form example

(1)	PIANO FABBRICAZIONE E CONTROLLO	ORDINE: (2)	PFC N°: (3)	Rev.	Del (4)
			Rif. Commessa interna: (5)	Pag. (6)	di

PRODOTTO DI FORNITURA: (7) DISEGNO: REV. (8) QUANTITÀ: NUMERO DI SERIE: (9)

FASE N.° (10)	FABBRICAZIONE E CONTROLLO (11)	DOCUMENTO DI RIFERIMENTO (12)	CONTROLLO (13)		ATTESTAZIONE DELLA FASE DA PARTE DEL FORNITORE (14)	ENTE DI INTERVENTO: (15)										N.°CERT. (19)	NOTE (20)
			TIPO	%		QUALITÀ FORNITORE		(16)	(17) (18)	CLIENTE	(16)	(17) (18)	CLIENTE FINALE	(16)	(17) (18)		

APPROVAZIONE (21)	QUALITÀ FORNITORE	OTO MELARA	CLIENTE FINALE (QUANDO PREVISTO)

18.4 ATTACHMENT 4: CERTIFICATE OF CONFORMITY (FORM)

18.4.1 Explanatory notes

Reference on the form	Explanation
1	Purchaser Name (in this case OTO Melara SpA)
2	OTO Melara order no. and relevant variants if any
3	Government Contract reference (only when is mentioned in OTO Melara order)
4	Name of the Certificate of Conformity addressee (for example : OTO Melara site of La Spezia or site of Brescia)
5	Supplier issuing the Certificate of conformity data and production facility address
6a	Name of the addressee of the material (only if different from the Certificate of Conformity addressee)
6b	Reference of Transport Document with the warning to indicate, by ticking the appropriate box, if it is a partial or complete delivery
7	Declaration of conformity to be signed by Supplier entitled person
8	Progressive Number in OTO Melara order
9	Supply description
10	Supply Quantity
11	Packages number
12	Supply Quantity still to be delivered in respect to total quantity
13	Quantity already supplied in respect to total quantity
14	When required, fill the form with the requested data, indicating e.g. requests for concession/ waiver which may be issued, if approved by OTO Melara

18.4.2 Form example

CERTIFICATO DI CONFORMITÀ ,		N°: Pag. 1 di pagine……			
1. Acquirente: 3. Contratto Governativo n.:		2. Riferimento e data dell'Ordine e successive varianti:			
4. Trasmesso a:		6a. Materiale Spedito a (Destinatario)			
5. Ragione sociale del Fornitore che emette il Certificato ed indirizzo dell'Unità produttiva		6b. Numero e data del documento di trasporto Spedizione Parziale Spedizione Finale			
7. Si certifica che, a meno delle deroghe/concessioni riportate nella casella 14, la totalità delle forniture sotto elencate (o dei servizi sotto elencati) è su tutti gli aspetti conforme alla/e specifica/specifiche, al/ai disegno/i ed al relativo ordine sopra riportato e che le forniture sono state ispezionate e provate in accordo con le condizioni ed i requisiti dell'ordine. Data Firma della persona abilitata (Fornitore) Nome e titolo (timbro)					
8. Voce dell'Ordine	9. Denominazione, Numero di Disegno / Part Number comprensivo di indice di revisione, numero di serie o lotto	10. Quantità della fornitura	11. Numero Imballaggio	12. Quantità ancora da consegnare	13. Quantità Montante Spedita
14. Note: - Piano della Qualità - numero di protocollo/rev.: - Piano di Fabbricazione e Controllo - numero di protocollo/rev.: - Elenco Deroghe/Concessioni: - Eventuali parti mancanti rispetto la configurazione del prodotto finito: - Elenco certificazioni allegate: - FAI (First Article Inspection) Report - numero di protocollo e relativa data:					
Continuare la lista su pagine separate se necessario richiamando come riferimento il numero di Certificato di Conformità					

Rif.: Rete Aziendale/Proc_Uff/RQA0001-06_Allegato 4_CoC (MSW 2010)

18.5 ATTACHMENT 5: WELDING PROCEDURE SPECIFICATION FORM

	MANUFACTURER'S WELDING *PROCEDURE SPECIFICATION (WPS)* *PROCEDURA DI SALDATURA*	WPS-N. /*PROC. N.*_____ Date/*Data* _____ Supp. WPAR N./WPAR di supp_____

Welding Process
Processo di Saldatura _____
Type / *Tipo* _____
JOINT / *GIUNTI*
Joint Type /*Tipo di Giunto* _____
Backing / *Sostegno* _____
Weld preparation / *Preparazione* _____
PARENT MATERIAL / *MATERIALE BASE*
Group.No./*Gruppo*___/____ to/*al* Group.No /*Gruppo* ___/_____
Spec. Type & Grade to/ *con* _____ _____
Specif. Tipo e Grado _____ _____
Thickness /*Spessore* _____
WELDING CONSUMABLE / *MATERIALE D'APPORTO*
Specification No./ *Norma No.* _____
AWS Designation / *Classificazione AWS* _____
Size / *Dimensioni* _____
Manufacturer / *Costruttore* _____

Joint Design and Welding Sequences
Schizzo del Giunto e Sequenze di Saldatura

WELDING POSITION / *POSIZIONE DI SALDATURA*
Position / *Posizione*
Welding Progression / *Progressione di saldatura*

PREHEAT /PRERISCALDO
Preheat Temp. / *Temperatura di preriscaldo (°C)*
Interpass Temp / *Temperatura di interpasso (°C)*

GAS(ES) / *GAS*

	Percent Composition / *Composizione %*			
	Gas(es) *Gas*	Mixture *Miscela*	Flow Rate *Portata*	
Shielding / *Protezione*				l/min.
Trailing / *Aggiuntivo*				l/min.

TECHNIQUE / *TECNICA*
String or Weave Beads / *Cordoni stretti o larghi*
Multiple or Single Pass / *Passata singola o multipla (per lato)*

Layer(s) *Passate*	Welding Process *Processo di saldatura*	Filler metal / Electrode size *Materiale apporto/ Dimensioni mm.*	Current Corrente		Voltage *Tensione*	Travel speed *Velocità Saldatura*	Heat imput *Apporto termico*
			Type & Polarity *Tipo e Polarità*	Amperes A	V	mm./ min.	Kj / mm.

MANUFACTURER / *COSTRUTTORE*

APPROVAL / *APPROVAZIONE*